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In[1]:= MMatrix[α_, ω_, t_, M0_] := M0 * {{Cos[α + t ω]^2 + Sin[t ω]^2, -2 I Sin[α] Sin[t ω]^2},
      {2 I Sin[α] Sin[t ω]^2, Cos[α - t ω]^2 + Sin[t ω]^2}} * Sec[α]^2
MMatrixInv[α_, ω_, t_, M0_] := {{Sec[α]^2 (Cos[α - t ω]^2 + Sin[t ω]^2),
      2 I Sec[α] Sin[t ω]^2 Tan[α]},
      {-2 I Sec[α] Sin[t ω]^2 Tan[α], Sec[α]^2 (Cos[α + t ω]^2 + Sin[t ω]^2)}}
Hq11[r_, s_, θ_] := r * Exp[I * θ]
Hq12[r_, s_, θ_] := s
Hq21[r_, s_, θ_] := s
Hq22[r_, s_, θ_] := r * Exp[-I * θ]
Hq[r_, s_, θ_] := {{Hq11[r, s, θ], Hq12[r, s, θ]}, {Hq21[r, s, θ], Hq22[r, s, θ]}}
Zeta11[α_, ω_, t_, M0_] :=
  ((-4 M0 + 2 M0 Cos[2 t ω] - M0 Cos[2 α - 2 t ω] - M0 Cos[2 α + 2 t ω] + 2 M0 Cos[α - t ω]^2 Sec[α]^2 +
    2 M0 Cos[2 α] Cos[α - t ω]^2 Sec[α]^2 + 2 M0 Sec[α]^2 Sin[t ω]^2 +
    2 M0 Cos[2 α] Sec[α]^2 Sin[t ω]^2 + 2 Sqrt[2] Sqrt[-M0^2 (-6 - 2 Cos[2 α] +
    2 Cos[2 t ω] - Cos[2 α - 2 t ω] - Cos[2 α + 2 t ω]) Sin[α]^2 Sin[t ω]^2])
  Sqrt[(1/(1 + Cos[2 α]) (-2 + 4 M0 - 2 Cos[2 α] - 2 M0 Cos[2 t ω] + M0 Cos[2 α - 2 t ω] +
    M0 Cos[2 α + 2 t ω] - 2 Sqrt[2] Sqrt[M0^2 (6 + 2 Cos[2 α] - 2 Cos[2 t ω] +
    Cos[2 α - 2 t ω] + Cos[2 α + 2 t ω]) Sin[α]^2 Sin[t ω]^2)])]) /
  (8 Sqrt[M0^2 (6 + 2 Cos[2 α] - 2 Cos[2 t ω] + Cos[2 α - 2 t ω] + Cos[2 α + 2 t ω]) Sin[α]^2 Sin[t ω]^2]) +
  ((4 M0 - 2 M0 Cos[2 t ω] + M0 Cos[2 α - 2 t ω] + M0 Cos[2 α + 2 t ω] - 2 M0 Cos[α - t ω]^2 Sec[α]^2 -
    2 M0 Cos[2 α] Cos[α - t ω]^2 Sec[α]^2 - 2 M0 Sec[α]^2 Sin[t ω]^2 -
    2 M0 Cos[2 α] Sec[α]^2 Sin[t ω]^2 + 2 Sqrt[2] Sqrt[-M0^2 (-6 - 2 Cos[2 α] +
    2 Cos[2 t ω] - Cos[2 α - 2 t ω] - Cos[2 α + 2 t ω]) Sin[α]^2 Sin[t ω]^2])
  Sqrt[(1/(1 + Cos[2 α]) (-2 + 4 M0 - 2 Cos[2 α] - 2 M0 Cos[2 t ω] + M0 Cos[2 α - 2 t ω] +
    M0 Cos[2 α + 2 t ω] + 2 Sqrt[2] Sqrt[M0^2 (6 + 2 Cos[2 α] - 2 Cos[2 t ω] +
    Cos[2 α - 2 t ω] + Cos[2 α + 2 t ω]) Sin[α]^2 Sin[t ω]^2)])]) /
  (8 Sqrt[M0^2 (6 + 2 Cos[2 α] - 2 Cos[2 t ω] + Cos[2 α - 2 t ω] + Cos[2 α + 2 t ω]) Sin[α]^2 Sin[t ω]^2])
Zeta12[α_, ω_, t_, M0_] :=
  (I Cos[α] Cot[α] Csc[t ω]^2 (-4 M0 + 2 M0 Cos[2 t ω] - M0 Cos[2 α - 2 t ω] -
    M0 Cos[2 α + 2 t ω] + 2 M0 Cos[α - t ω]^2 Sec[α]^2 + 2 M0 Cos[2 α] Cos[α - t ω]^2 Sec[α]^2 +
    2 M0 Sec[α]^2 Sin[t ω]^2 + 2 M0 Cos[2 α] Sec[α]^2 Sin[t ω]^2 + 2 Sqrt[2] Sqrt[-M0^2 (-6 - 2 Cos[2 α] +
    2 Cos[2 t ω] - Cos[2 α - 2 t ω] - Cos[2 α + 2 t ω]) Sin[α]^2 Sin[t ω]^2])

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+ (I M0 (1 + Cos[2 α]) Sec[α] Sin[t ω]^2
  Sqrt[ (1/(1 + Cos[2 α]) (-2 + 4 M0 - 2 Cos[2 α] - 2 M0 Cos[2 t ω] + M0 Cos[2 α - 2 t ω] +
    M0 Cos[2 α + 2 t ω] + 2 Sqrt[2] Sqrt[M0^2 (6 + 2 Cos[2 α] - 2 Cos[2 t ω] +
    Cos[2 α - 2 t ω] + Cos[2 α + 2 t ω]) Sin[α]^2 Sin[t ω]^2)) Tan[α] ) ] /
  (2 Sqrt[M0^2 (6 + 2 Cos[2 α] - 2 Cos[2 t ω] + Cos[2 α - 2 t ω] + Cos[2 α + 2 t ω]) Sin[α]^2 Sin[t ω]^2] )
Zeta22[α_, ω_, t_, M0_] :=
  (Sqrt[ (1/(1 + Cos[2 α]) (-2 + 4 M0 - 2 Cos[2 α] - 2 M0 Cos[2 t ω] + M0 Cos[2 α - 2 t ω] +
    M0 Cos[2 α + 2 t ω] - 2 Sqrt[2] Sqrt[M0^2 (6 + 2 Cos[2 α] - 2 Cos[2 t ω] +
    Cos[2 α - 2 t ω] + Cos[2 α + 2 t ω]) Sin[α]^2 Sin[t ω]^2)) ) ]
  (4 M0 - 2 M0 Cos[2 t ω] + M0 Cos[2 α - 2 t ω] + M0 Cos[2 α + 2 t ω] - 2 M0 Cos[α - t ω]^2 Sec[α]^2 -
    2 M0 Cos[2 α] Cos[α - t ω]^2 Sec[α]^2 - 2 M0 Sec[α]^2 Sin[t ω]^2 -
    2 M0 Cos[2 α] Sec[α]^2 Sin[t ω]^2 + 2 Sqrt[2]
    Sqrt[M0^2 (6 + 2 Cos[2 α] - 2 Cos[2 t ω] + Cos[2 α - 2 t ω] + Cos[2 α + 2 t ω]) Sin[α]^2 Sin[t ω]^2] )
  ) /
  (8
    Sqrt[M0^2 (6 + 2 Cos[2 α] - 2 Cos[2 t ω] + Cos[2 α - 2 t ω] + Cos[2 α + 2 t ω]) Sin[α]^2 Sin[t ω]^2] ) +
  (Sqrt[ (1/(1 + Cos[2 α]) (-2 + 4 M0 - 2 Cos[2 α] - 2 M0 Cos[2 t ω] + M0 Cos[2 α - 2 t ω] +
    M0 Cos[2 α + 2 t ω] + 2 Sqrt[2] Sqrt[M0^2 (6 + 2 Cos[2 α] - 2 Cos[2 t ω] +
    Cos[2 α - 2 t ω] + Cos[2 α + 2 t ω]) Sin[α]^2 Sin[t ω]^2)) ) ]
  (-4 M0 + 2 M0 Cos[2 t ω] - M0 Cos[2 α - 2 t ω] - M0 Cos[2 α + 2 t ω] +
    2 M0 Cos[α - t ω]^2 Sec[α]^2 + 2 M0 Cos[2 α] Cos[α - t ω]^2 Sec[α]^2 +
    2 M0 Sec[α]^2 Sin[t ω]^2 + 2 M0 Cos[2 α] Sec[α]^2 Sin[t ω]^2 + 2 Sqrt[2]
    Sqrt[M0^2 (6 + 2 Cos[2 α] - 2 Cos[2 t ω] + Cos[2 α - 2 t ω] + Cos[2 α + 2 t ω]) Sin[α]^2 Sin[t ω]^2] )
  ) /
  (8
    Sqrt[M0^2 (6 + 2 Cos[2 α] - 2 Cos[2 t ω] + Cos[2 α - 2 t ω] + Cos[2 α + 2 t ω]) Sin[α]^2 Sin[t ω]^2] )
ξMatrix[α_, ω_, t_, M0_] := {{Zeta11[α, ω, t, M0], Zeta12[α, ω, t, M0]},
  {Zeta21[α, ω, t, M0], Zeta22[α, ω, t, M0]}}
Hq11[r_, s_, θ_] := r * Exp[I * θ]

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Hq12[r_, s_, θ_] := s
Hq21[r_, s_, θ_] := s
Hq22[r_, s_, θ_] := r * Exp[-I * θ]
Hq[r_, s_, θ_] := {{Hq11[r, s, θ], Hq12[r, s, θ]}, {Hq21[r, s, θ], Hq22[r, s, θ]}}
DerivativeMatrix11[α_, ω_, t_, M0_] :=
- ( ( (-4 M0 + 2 M0 Cos[2 t ω] - M0 Cos[2 α - 2 t ω] - M0 Cos[2 α + 2 t ω] + 2 M0 Cos[α - t ω]^2 Sec[α]^2 +
      2 M0 Cos[2 α] Cos[α - t ω]^2 Sec[α]^2 + 2 M0 Sec[α]^2 Sin[t ω]^2 +
      2 M0 Cos[2 α] Sec[α]^2 Sin[t ω]^2 + 2 Sqrt[2] Sqrt[-M0^2 (-6 - 2 Cos[2 α] + 2
      Cos[2 t ω] - Cos[2 α - 2 t ω] - Cos[2 α + 2 t ω]) Sin[α]^2 Sin[t ω]^2])
  Sqrt[ ( 1 / (1 + Cos[2 α]) (-2 + 4 M0 - 2 Cos[2 α] - 2 M0 Cos[2 t ω] + M0 Cos[2 α - 2 t ω] +
      M0 Cos[2 α + 2 t ω] - 2 Sqrt[2] Sqrt[M0^2 (6 + 2 Cos[2 α] - 2 Cos[2 t ω] +
      Cos[2 α - 2 t ω] + Cos[2 α + 2 t ω]) Sin[α]^2 Sin[t ω]^2]) )
  (2 M0^2 ω Cos[t ω] (6 + 2 Cos[2 α] - 2 Cos[2 t ω] + Cos[2 α - 2 t ω] + Cos[2 α + 2 t ω])
  Sin[α]^2 Sin[t ω] + M0^2 Sin[α]^2 Sin[t ω]^2
  (4 ω Sin[2 t ω] + 2 ω Sin[2 α - 2 t ω] - 2 ω Sin[2 α + 2 t ω])) ) /
  (16 (M0^2 (6 + 2 Cos[2 α] - 2 Cos[2 t ω] + Cos[2 α - 2 t ω] + Cos[2 α + 2 t ω])
  Sin[α]^2 Sin[t ω]^2)^(3/2)) ) -
( ( (4 M0 - 2 M0 Cos[2 t ω] + M0 Cos[2 α - 2 t ω] + M0 Cos[2 α + 2 t ω] - 2 M0 Cos[α - t ω]^2 Sec[α]^2 -
      2 M0 Cos[2 α] Cos[α - t ω]^2 Sec[α]^2 - 2 M0 Sec[α]^2 Sin[t ω]^2 -
      2 M0 Cos[2 α] Sec[α]^2 Sin[t ω]^2 + 2 Sqrt[2] Sqrt[-M0^2 (-6 - 2 Cos[2 α] +
      2 Cos[2 t ω] - Cos[2 α - 2 t ω] - Cos[2 α + 2 t ω]) Sin[α]^2 Sin[t ω]^2])
  Sqrt[ ( 1 / (1 + Cos[2 α]) (-2 + 4 M0 - 2 Cos[2 α] - 2 M0 Cos[2 t ω] + M0 Cos[2 α - 2 t ω] +
      M0 Cos[2 α + 2 t ω] + 2 Sqrt[2] Sqrt[M0^2 (6 + 2 Cos[2 α] - 2 Cos[2 t ω] +
      Cos[2 α - 2 t ω] + Cos[2 α + 2 t ω]) Sin[α]^2 Sin[t ω]^2]) )
  (2 M0^2 ω Cos[t ω] (6 + 2 Cos[2 α] - 2 Cos[2 t ω] + Cos[2 α - 2 t ω] + Cos[2 α + 2 t ω])
  Sin[α]^2 Sin[t ω] + M0^2 Sin[α]^2 Sin[t ω]^2
  (4 ω Sin[2 t ω] + 2 ω Sin[2 α - 2 t ω] - 2 ω Sin[2 α + 2 t ω])) ) / (16
  (M0^2 (6 + 2 Cos[2 α] - 2 Cos[2 t ω] + Cos[2 α - 2 t ω] + Cos[2 α + 2 t ω]) Sin[α]^2 Sin[t ω]^2)^(3/2)) ) +
( (-4 M0 + 2 M0 Cos[2 t ω] - M0 Cos[2 α - 2 t ω] - M0 Cos[2 α + 2 t ω] +
      2 M0 Cos[α - t ω]^2 Sec[α]^2 + 2 M0 Cos[2 α] Cos[α - t ω]^2 Sec[α]^2 +
      2 M0 Sec[α]^2 Sin[t ω]^2 + 2 M0 Cos[2 α] Sec[α]^2 Sin[t ω]^2 +
      2 Sqrt[2] Sqrt[-M0^2 (-6 - 2 Cos[2 α] + 2 Cos[2 t ω] - Cos[2 α - 2 t ω] - Cos[2 α + 2 t ω])
      Sin[α]^2 Sin[t ω]^2])
  (4 M0 ω Sin[2 t ω] + 2 M0 ω Sin[2 α - 2 t ω] - 2 M0 ω Sin[2 α + 2 t ω] - (Sqrt[2] (2 M0^2 ω Cos[t ω]

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$$\begin{aligned}
& \left((6 + 2 \cos[2\alpha] - 2 \cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega] + \right. \\
& \left. M\theta^2 \sin[\alpha]^2 \sin[t\omega]^2 (4\omega \sin[2t\omega] + 2\omega \sin[2\alpha - 2t\omega] - 2\omega \sin[2\alpha + 2t\omega]) \right) / \\
& \left(\sqrt{M\theta^2 (6 + 2 \cos[2\alpha] - 2 \cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2} \right. \\
& \left. \right) / \left(16 (1 + \cos[2\alpha]) \right) \\
& \sqrt{M\theta^2 (6 + 2 \cos[2\alpha] - 2 \cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2} \\
& \sqrt{\left(\frac{1}{1 + \cos[2\alpha]} \left(-2 + 4M\theta - 2 \cos[2\alpha] - 2M\theta \cos[2t\omega] + M\theta \cos[2\alpha - 2t\omega] + \right. \right. \\
& \left. \left. M\theta \cos[2\alpha + 2t\omega] - 2\sqrt{2} \sqrt{M\theta^2 (6 + 2 \cos[2\alpha] - 2 \cos[2t\omega] + \right. \right. \\
& \left. \left. \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2} \right) \right) + \\
& \left((4M\theta - 2M\theta \cos[2t\omega] + M\theta \cos[2\alpha - 2t\omega] + M\theta \cos[2\alpha + 2t\omega] - 2M\theta \cos[\alpha - t\omega]^2 \sec[\alpha]^2 - \right. \\
& 2M\theta \cos[2\alpha] \cos[\alpha - t\omega]^2 \sec[\alpha]^2 - 2M\theta \sec[\alpha]^2 \sin[t\omega]^2 - \\
& 2M\theta \cos[2\alpha] \sec[\alpha]^2 \sin[t\omega]^2 + 2\sqrt{2} \sqrt{-M\theta^2 (-6 - 2 \cos[2\alpha] + \\
& 2 \cos[2t\omega] - \cos[2\alpha - 2t\omega] - \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2}) \\
& \left(4M\theta \omega \sin[2t\omega] + 2M\theta \omega \sin[2\alpha - 2t\omega] - 2M\theta \omega \sin[2\alpha + 2t\omega] + (\sqrt{2} (2M\theta^2 \omega \cos[t\omega] \right. \\
& (6 + 2 \cos[2\alpha] - 2 \cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega] + \\
& M\theta^2 \sin[\alpha]^2 \sin[t\omega]^2 (4\omega \sin[2t\omega] + 2\omega \sin[2\alpha - 2t\omega] - 2\omega \sin[2\alpha + 2t\omega])) / \\
& \left(\sqrt{M\theta^2 (6 + 2 \cos[2\alpha] - 2 \cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2} \right. \\
& \left. \right) / \left(16 (1 + \cos[2\alpha]) \right) \\
& \sqrt{M\theta^2 (6 + 2 \cos[2\alpha] - 2 \cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2} \\
& \sqrt{\left(\frac{1}{1 + \cos[2\alpha]} \left(-2 + 4M\theta - 2 \cos[2\alpha] - 2M\theta \cos[2t\omega] + M\theta \cos[2\alpha - 2t\omega] + \right. \right. \\
& \left. \left. M\theta \cos[2\alpha + 2t\omega] + 2\sqrt{2} \sqrt{M\theta^2 (6 + 2 \cos[2\alpha] - 2 \cos[2t\omega] + \right. \right. \\
& \left. \left. \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2} \right) \right) + \\
& \left(\sqrt{\left(\frac{1}{1 + \cos[2\alpha]} \left(-2 + 4M\theta - 2 \cos[2\alpha] - 2M\theta \cos[2t\omega] + M\theta \cos[2\alpha - 2t\omega] + \right. \right. \right. \\
& \left. \left. M\theta \cos[2\alpha + 2t\omega] + 2\sqrt{2} \sqrt{M\theta^2 (6 + 2 \cos[2\alpha] - 2 \cos[2t\omega] + \right. \right. \\
& \left. \left. \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2} \right) \right) \\
& (-4M\theta \omega \cos[t\omega] \sec[\alpha]^2 \sin[t\omega] - 4M\theta \omega \cos[2\alpha] \cos[t\omega] \sec[\alpha]^2 \sin[t\omega] + \\
& 4M\theta \omega \sin[2t\omega] + 2M\theta \omega \sin[2\alpha - 2t\omega] - 4M\theta \omega \cos[\alpha - t\omega] \sec[\alpha]^2 \sin[\alpha - t\omega] - \\
& 4M\theta \omega \cos[2\alpha] \cos[\alpha - t\omega] \sec[\alpha]^2 \sin[\alpha - t\omega] - 2M\theta \omega \sin[2\alpha + 2t\omega] + \\
& (\sqrt{2} (-2M\theta^2 \omega \cos[t\omega] (-6 - 2 \cos[2\alpha] + 2 \cos[2t\omega] - \cos[2\alpha - 2t\omega] - \cos[2\alpha + 2t\omega]) \\
& \sin[\alpha]^2 \sin[t\omega] - M\theta^2 \sin[\alpha]^2 \sin[t\omega]^2 \\
& (-4\omega \sin[2t\omega] - 2\omega \sin[2\alpha - 2t\omega] + 2\omega \sin[2\alpha + 2t\omega])) /
\end{aligned}$$

$$\begin{aligned}
& \left(\sqrt{(-M0^2 (-6 - 2 \cos[2 \alpha] + 2 \cos[2 t \omega] - \cos[2 \alpha - 2 t \omega] - \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega]^2))} \right) / \\
& \left(8 \sqrt{M0^2 (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega]^2} \right) + \\
& \left(\sqrt{\left(\frac{1}{1 + \cos[2 \alpha]} (-2 + 4 M0 - 2 \cos[2 \alpha] - 2 M0 \cos[2 t \omega] + M0 \cos[2 \alpha - 2 t \omega] + \right. \right. \\
& \quad \left. \left. M0 \cos[2 \alpha + 2 t \omega] - 2 \sqrt{2} \sqrt{M0^2 (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \right. \right. \\
& \quad \left. \left. \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega]^2} \right) \right) \\
& \left(4 M0 \omega \cos[t \omega] \sec[\alpha]^2 \sin[t \omega] + 4 M0 \omega \cos[2 \alpha] \cos[t \omega] \sec[\alpha]^2 \sin[t \omega] - \right. \\
& \quad 4 M0 \omega \sin[2 t \omega] - 2 M0 \omega \sin[2 \alpha - 2 t \omega] + 4 M0 \omega \cos[\alpha - t \omega] \sec[\alpha]^2 \sin[\alpha - t \omega] + \\
& \quad 4 M0 \omega \cos[2 \alpha] \cos[\alpha - t \omega] \sec[\alpha]^2 \sin[\alpha - t \omega] + 2 M0 \omega \sin[2 \alpha + 2 t \omega] + \\
& \quad \left(\sqrt{2} (-2 M0^2 \omega \cos[t \omega] (-6 - 2 \cos[2 \alpha] + 2 \cos[2 t \omega] - \cos[2 \alpha - 2 t \omega] - \cos[2 \alpha + 2 t \omega]) \right. \\
& \quad \left. \sin[\alpha]^2 \sin[t \omega] - M0^2 \sin[\alpha]^2 \sin[t \omega]^2 \right. \\
& \quad \left. (-4 \omega \sin[2 t \omega] - 2 \omega \sin[2 \alpha - 2 t \omega] + 2 \omega \sin[2 \alpha + 2 t \omega]) \right) \right) / \\
& \left(\sqrt{(-M0^2 (-6 - 2 \cos[2 \alpha] + 2 \cos[2 t \omega] - \cos[2 \alpha - 2 t \omega] - \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega]^2)} \right) / \\
& \left(8 \sqrt{M0^2 (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega]^2} \right) \\
\text{DerivativeMatrix12}[\alpha_, \omega_, t_, M0_] := & \\
& - \left(\left(i \omega \cos[\alpha] \cot[\alpha] \cot[t \omega] \csc[t \omega]^2 (-4 M0 + 2 M0 \cos[2 t \omega] - M0 \cos[2 \alpha - 2 t \omega] - \right. \right. \\
& \quad M0 \cos[2 \alpha + 2 t \omega] + 2 M0 \cos[\alpha - t \omega]^2 \sec[\alpha]^2 + 2 M0 \cos[2 \alpha] \cos[\alpha - t \omega]^2 \sec[\alpha]^2 + \\
& \quad 2 M0 \sec[\alpha]^2 \sin[t \omega]^2 + 2 M0 \cos[2 \alpha] \sec[\alpha]^2 \sin[t \omega]^2 + 2 \sqrt{2} \sqrt{(-M0^2 (-6 - 2 \cos[2 \alpha] + 2 \cos[2 t \omega] - \cos[2 \alpha - 2 t \omega] - \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega]^2)} \right. \\
& \quad \left. \left. \sqrt{\left(\frac{1}{1 + \cos[2 \alpha]} (-2 + 4 M0 - 2 \cos[2 \alpha] - 2 M0 \cos[2 t \omega] + M0 \cos[2 \alpha - 2 t \omega] + \right. \right. \right. \\
& \quad \left. \left. \left. M0 \cos[2 \alpha + 2 t \omega] - 2 \sqrt{2} \sqrt{M0^2 (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \right. \right. \right. \\
& \quad \left. \left. \left. \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega]^2} \right) \right) \right) \\
& \left(4 M0 - 2 M0 \cos[2 t \omega] + M0 \cos[2 \alpha - 2 t \omega] + M0 \cos[2 \alpha + 2 t \omega] - \right. \\
& \quad 2 M0 \cos[\alpha - t \omega]^2 \sec[\alpha]^2 - 2 M0 \cos[2 \alpha] \cos[\alpha - t \omega]^2 \sec[\alpha]^2 - \\
& \quad 2 M0 \sec[\alpha]^2 \sin[t \omega]^2 - 2 M0 \cos[2 \alpha] \sec[\alpha]^2 \sin[t \omega]^2 + \\
& \quad \left. 2 \sqrt{2} \sqrt{M0^2 (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega]^2} \right) / \left(16 M0 (1 + \cos[2 \alpha]) \right) \\
& \left. \sqrt{M0^2 (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega]^2} \right) \\
& + \left(i \omega \cos[\alpha] \cot[\alpha] \cot[t \omega] \csc[t \omega]^2 (4 M0 - 2 M0 \cos[2 t \omega] + M0 \cos[2 \alpha - 2 t \omega] + \right. \\
& \quad M0 \cos[2 \alpha + 2 t \omega] - 2 M0 \cos[\alpha - t \omega]^2 \sec[\alpha]^2 - 2 M0 \cos[2 \alpha] \cos[\alpha - t \omega]^2 \sec[\alpha]^2 - \\
& \quad \left. 2 M0 \sec[\alpha]^2 \sin[t \omega]^2 - 2 M0 \cos[2 \alpha] \sec[\alpha]^2 \sin[t \omega]^2 + 2 \sqrt{2} \sqrt{(-M0^2 (-6 - 2 \cos[2 \alpha] + 2 \cos[2 t \omega] - \cos[2 \alpha - 2 t \omega] - \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega]^2)} \right. \\
& \quad \left. \left. \sqrt{\left(\frac{1}{1 + \cos[2 \alpha]} (-2 + 4 M0 - 2 \cos[2 \alpha] - 2 M0 \cos[2 t \omega] + M0 \cos[2 \alpha - 2 t \omega] + \right. \right. \right. \\
& \quad \left. \left. \left. M0 \cos[2 \alpha + 2 t \omega] - 2 \sqrt{2} \sqrt{M0^2 (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \right. \right. \right. \\
& \quad \left. \left. \left. \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega]^2} \right) \right) \right)
\end{aligned}$$

$$\begin{aligned}
& 2 \cos[2 t \omega] - \cos[2 \alpha - 2 t \omega] - \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega]^2) \\
& \sqrt{\left(\frac{1}{1 + \cos[2 \alpha]} \left(-2 + 4 M0 - 2 \cos[2 \alpha] - 2 M0 \cos[2 t \omega] + M0 \cos[2 \alpha - 2 t \omega] + \right. \right. \\
& \quad M0 \cos[2 \alpha + 2 t \omega] + 2 \sqrt{2} \sqrt{M0^2 (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega]^2} \Big) \Big) \\
& \left(-4 M0 + 2 M0 \cos[2 t \omega] - M0 \cos[2 \alpha - 2 t \omega] - M0 \cos[2 \alpha + 2 t \omega] + \right. \\
& \quad 2 M0 \cos[\alpha - t \omega]^2 \sec[\alpha]^2 + 2 M0 \cos[2 \alpha] \cos[\alpha - t \omega]^2 \sec[\alpha]^2 + \\
& \quad 2 M0 \sec[\alpha]^2 \sin[t \omega]^2 + 2 M0 \cos[2 \alpha] \sec[\alpha]^2 \sin[t \omega]^2 + 2 \sqrt{2} \\
& \quad \left. \sqrt{M0^2 (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega]^2} \right) \\
& \Big) / \left(16 M0 (1 + \cos[2 \alpha]) \right) \\
& \sqrt{M0^2 (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega]^2} \Big) - \\
& \left(i \cos[\alpha] \cot[\alpha] \csc[t \omega]^2 \left(-4 M0 + 2 M0 \cos[2 t \omega] - M0 \cos[2 \alpha - 2 t \omega] - \right. \right. \\
& \quad M0 \cos[2 \alpha + 2 t \omega] + 2 M0 \cos[\alpha - t \omega]^2 \sec[\alpha]^2 + 2 M0 \cos[2 \alpha] \cos[\alpha - t \omega]^2 \sec[\alpha]^2 + \\
& \quad 2 M0 \sec[\alpha]^2 \sin[t \omega]^2 + 2 M0 \cos[2 \alpha] \sec[\alpha]^2 \sin[t \omega]^2 + 2 \sqrt{2} \sqrt{-M0^2 (-6 - 2 \cos[2 \alpha] + \\
& \quad 2 \cos[2 t \omega] - \cos[2 \alpha - 2 t \omega] - \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega]^2} \Big) \Big) \\
& \sqrt{\left(\frac{1}{1 + \cos[2 \alpha]} \left(-2 + 4 M0 - 2 \cos[2 \alpha] - 2 M0 \cos[2 t \omega] + M0 \cos[2 \alpha - 2 t \omega] + \right. \right. \\
& \quad M0 \cos[2 \alpha + 2 t \omega] - 2 \sqrt{2} \sqrt{M0^2 (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega]^2} \Big) \Big) \\
& \left(4 M0 - 2 M0 \cos[2 t \omega] + M0 \cos[2 \alpha - 2 t \omega] + M0 \cos[2 \alpha + 2 t \omega] - 2 M0 \cos[\alpha - t \omega]^2 \sec[\alpha]^2 - \right. \\
& \quad 2 M0 \cos[2 \alpha] \cos[\alpha - t \omega]^2 \sec[\alpha]^2 - 2 M0 \sec[\alpha]^2 \sin[t \omega]^2 - \\
& \quad 2 M0 \cos[2 \alpha] \sec[\alpha]^2 \sin[t \omega]^2 + 2 \sqrt{2} \\
& \quad \left. \sqrt{M0^2 (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega]^2} \right) \\
& \left(2 M0^2 \omega \cos[t \omega] (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega]) \right. \\
& \quad \left. \sin[\alpha]^2 \sin[t \omega] + M0^2 \sin[\alpha]^2 \sin[t \omega]^2 \right. \\
& \quad \left. (4 \omega \sin[2 t \omega] + 2 \omega \sin[2 \alpha - 2 t \omega] - 2 \omega \sin[2 \alpha + 2 t \omega]) \right) \Big) / \left(64 M0 (1 + \cos[2 \alpha]) \right) \\
& \left(M0^2 (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega]^2 \right)^{3/2} \Big) + \\
& \left(i \cos[\alpha] \cot[\alpha] \csc[t \omega]^2 \left(4 M0 - 2 M0 \cos[2 t \omega] + M0 \cos[2 \alpha - 2 t \omega] + M0 \cos[2 \alpha + 2 t \omega] - \right. \right. \\
& \quad 2 M0 \cos[\alpha - t \omega]^2 \sec[\alpha]^2 - 2 M0 \cos[2 \alpha] \cos[\alpha - t \omega]^2 \sec[\alpha]^2 - 2 M0 \sec[\alpha]^2 \sin[t \omega]^2 - \\
& \quad 2 M0 \cos[2 \alpha] \sec[\alpha]^2 \sin[t \omega]^2 + 2 \sqrt{2} \sqrt{-M0^2 (-6 - 2 \cos[2 \alpha] + \\
& \quad 2 \cos[2 t \omega] - \cos[2 \alpha - 2 t \omega] - \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega]^2} \Big) \Big) \\
& \sqrt{\left(\frac{1}{1 + \cos[2 \alpha]} \left(-2 + 4 M0 - 2 \cos[2 \alpha] - 2 M0 \cos[2 t \omega] + M0 \cos[2 \alpha - 2 t \omega] + \right. \right.
\end{aligned}$$

$$\begin{aligned}
& \left(M\theta \cos[2\alpha + 2t\omega] + 2\sqrt{2} \sqrt{M\theta^2 (6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2} \right) \\
& \left(-4M\theta + 2M\theta \cos[2t\omega] - M\theta \cos[2\alpha - 2t\omega] - M\theta \cos[2\alpha + 2t\omega] + \right. \\
& 2M\theta \cos[\alpha - t\omega]^2 \sec[\alpha]^2 + 2M\theta \cos[2\alpha] \cos[\alpha - t\omega]^2 \sec[\alpha]^2 + \\
& 2M\theta \sec[\alpha]^2 \sin[t\omega]^2 + 2M\theta \cos[2\alpha] \sec[\alpha]^2 \sin[t\omega]^2 + 2\sqrt{2} \\
& \left. \sqrt{M\theta^2 (6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2} \right) \\
& \left(2M\theta^2 \omega \cos[t\omega] (6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega]) \right. \\
& \sin[\alpha]^2 \sin[t\omega] + M\theta^2 \sin[\alpha]^2 \sin[t\omega]^2 \\
& \left. (4\omega \sin[2t\omega] + 2\omega \sin[2\alpha - 2t\omega] - 2\omega \sin[2\alpha + 2t\omega]) \right) \Big/ (64M\theta (1 + \cos[2\alpha]) \\
& (M\theta^2 (6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2)^{3/2}) + \\
& \left(i \cos[\alpha] \cot[\alpha] \csc[t\omega]^2 (-4M\theta + 2M\theta \cos[2t\omega] - M\theta \cos[2\alpha - 2t\omega] - \right. \\
& M\theta \cos[2\alpha + 2t\omega] + 2M\theta \cos[\alpha - t\omega]^2 \sec[\alpha]^2 + 2M\theta \cos[2\alpha] \cos[\alpha - t\omega]^2 \sec[\alpha]^2 + \\
& 2M\theta \sec[\alpha]^2 \sin[t\omega]^2 + 2M\theta \cos[2\alpha] \sec[\alpha]^2 \sin[t\omega]^2 + \\
& 2\sqrt{2} \sqrt{(-M\theta^2 (-6 - 2\cos[2\alpha] + 2\cos[2t\omega] - \cos[2\alpha - 2t\omega] - \cos[2\alpha + 2t\omega]) \\
& \sin[\alpha]^2 \sin[t\omega]^2)} \Big) (4M\theta - 2M\theta \cos[2t\omega] + M\theta \cos[2\alpha - 2t\omega] + \\
& M\theta \cos[2\alpha + 2t\omega] - 2M\theta \cos[\alpha - t\omega]^2 \sec[\alpha]^2 - 2M\theta \cos[2\alpha] \cos[\alpha - t\omega]^2 \sec[\alpha]^2 - \\
& 2M\theta \sec[\alpha]^2 \sin[t\omega]^2 - 2M\theta \cos[2\alpha] \sec[\alpha]^2 \sin[t\omega]^2 + 2\sqrt{2} \\
& \left. \sqrt{M\theta^2 (6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2} \right) \\
& \left(4M\theta \omega \sin[2t\omega] + 2M\theta \omega \sin[2\alpha - 2t\omega] - 2M\theta \omega \sin[2\alpha + 2t\omega] - \right. \\
& \left(\sqrt{2} (2M\theta^2 \omega \cos[t\omega] (6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega]) \right. \\
& \sin[\alpha]^2 \sin[t\omega] + M\theta^2 \sin[\alpha]^2 \sin[t\omega]^2 \\
& \left. (4\omega \sin[2t\omega] + 2\omega \sin[2\alpha - 2t\omega] - 2\omega \sin[2\alpha + 2t\omega]) \right) \Big/ \\
& \left(\sqrt{M\theta^2 (6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2} \right. \\
& \left. \left. \left. \right) \right) \Big/ (64M\theta (1 + \cos[2\alpha])^2 \\
& \sqrt{M\theta^2 (6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2} \\
& \sqrt{\left(\frac{1}{1 + \cos[2\alpha]} (-2 + 4M\theta - 2\cos[2\alpha] - 2M\theta \cos[2t\omega] + M\theta \cos[2\alpha - 2t\omega] + \right. \\
& M\theta \cos[2\alpha + 2t\omega] - 2\sqrt{2} \sqrt{M\theta^2 (6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2} \right) \Big) - \\
& \left(i \cos[\alpha] \cot[\alpha] \csc[t\omega]^2 (4M\theta - 2M\theta \cos[2t\omega] + M\theta \cos[2\alpha - 2t\omega] + M\theta \cos[2\alpha + 2t\omega] - \right. \\
& 2M\theta \cos[\alpha - t\omega]^2 \sec[\alpha]^2 - 2M\theta \cos[2\alpha] \cos[\alpha - t\omega]^2 \sec[\alpha]^2 - \\
& 2M\theta \sec[\alpha]^2 \sin[t\omega]^2 - 2M\theta \cos[2\alpha] \sec[\alpha]^2 \sin[t\omega]^2 + \\
& \left. 2\sqrt{2} \sqrt{(-M\theta^2 (-6 - 2\cos[2\alpha] + 2\cos[2t\omega] - \cos[2\alpha - 2t\omega] - \cos[2\alpha + 2t\omega])} \right)
\end{aligned}$$

$$\begin{aligned}
& \sin[\alpha]^2 \sin[t \omega]^2) \left(-4 M0 + 2 M0 \cos[2 t \omega] - M0 \cos[2 \alpha - 2 t \omega] - \right. \\
& M0 \cos[2 \alpha + 2 t \omega] + 2 M0 \cos[\alpha - t \omega]^2 \sec[\alpha]^2 + 2 M0 \cos[2 \alpha] \cos[\alpha - t \omega]^2 \sec[\alpha]^2 + \\
& 2 M0 \sec[\alpha]^2 \sin[t \omega]^2 + 2 M0 \cos[2 \alpha] \sec[\alpha]^2 \sin[t \omega]^2 + 2 \sqrt{2} \\
& \left. \sqrt{M0^2 (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega])} \sin[\alpha]^2 \sin[t \omega]^2 \right) \\
& \left(4 M0 \omega \sin[2 t \omega] + 2 M0 \omega \sin[2 \alpha - 2 t \omega] - 2 M0 \omega \sin[2 \alpha + 2 t \omega] + \right. \\
& \left(\sqrt{2} (2 M0^2 \omega \cos[t \omega] (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega]) \right. \\
& \sin[\alpha]^2 \sin[t \omega] + M0^2 \sin[\alpha]^2 \sin[t \omega]^2 \\
& \left. (4 \omega \sin[2 t \omega] + 2 \omega \sin[2 \alpha - 2 t \omega] - 2 \omega \sin[2 \alpha + 2 t \omega]) \right) \Big) \Big) / \\
& \left(\sqrt{M0^2 (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega])} \sin[\alpha]^2 \sin[t \omega]^2 \right. \\
& \left. \Big) \Big) \Big) / \left(64 M0 (1 + \cos[2 \alpha])^2 \right. \\
& \left. \sqrt{M0^2 (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega])} \sin[\alpha]^2 \sin[t \omega]^2 \right. \\
& \left. \sqrt{\left(\frac{1}{1 + \cos[2 \alpha]} \left(-2 + 4 M0 - 2 \cos[2 \alpha] - 2 M0 \cos[2 t \omega] + M0 \cos[2 \alpha - 2 t \omega] + \right. \right. \right. \\
& \left. \left. M0 \cos[2 \alpha + 2 t \omega] + 2 \sqrt{2} \sqrt{M0^2 (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \right. \right. \\
& \left. \left. \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega])} \sin[\alpha]^2 \sin[t \omega]^2 \right) \right) \Big) \Big) + \\
& \left(i \cos[\alpha] \cot[\alpha] \csc[t \omega]^2 \left(-4 M0 + 2 M0 \cos[2 t \omega] - M0 \cos[2 \alpha - 2 t \omega] - M0 \cos[2 \alpha + 2 t \omega] + \right. \right. \\
& 2 M0 \cos[\alpha - t \omega]^2 \sec[\alpha]^2 + 2 M0 \cos[2 \alpha] \cos[\alpha - t \omega]^2 \sec[\alpha]^2 + 2 M0 \sec[\alpha]^2 \sin[t \omega]^2 + \\
& 2 M0 \cos[2 \alpha] \sec[\alpha]^2 \sin[t \omega]^2 + 2 \sqrt{2} \sqrt{-M0^2 (-6 - 2 \cos[2 \alpha] + \\
& 2 \cos[2 t \omega] - \cos[2 \alpha - 2 t \omega] - \cos[2 \alpha + 2 t \omega])} \sin[\alpha]^2 \sin[t \omega]^2) \Big) \Big) \\
& \left. \sqrt{\left(\frac{1}{1 + \cos[2 \alpha]} \left(-2 + 4 M0 - 2 \cos[2 \alpha] - 2 M0 \cos[2 t \omega] + M0 \cos[2 \alpha - 2 t \omega] + \right. \right. \right. \\
& \left. \left. M0 \cos[2 \alpha + 2 t \omega] - 2 \sqrt{2} \sqrt{M0^2 (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \right. \right. \\
& \left. \left. \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega])} \sin[\alpha]^2 \sin[t \omega]^2 \right) \right) \Big) \Big) \right) \\
& \left(-4 M0 \omega \cos[t \omega] \sec[\alpha]^2 \sin[t \omega] - 4 M0 \omega \cos[2 \alpha] \cos[t \omega] \sec[\alpha]^2 \sin[t \omega] + \right. \\
& 4 M0 \omega \sin[2 t \omega] + 2 M0 \omega \sin[2 \alpha - 2 t \omega] - 4 M0 \omega \cos[\alpha - t \omega] \sec[\alpha]^2 \sin[\alpha - t \omega] - \\
& 4 M0 \omega \cos[2 \alpha] \cos[\alpha - t \omega] \sec[\alpha]^2 \sin[\alpha - t \omega] - \\
& 2 M0 \omega \sin[2 \alpha + 2 t \omega] + \left(\sqrt{2} (2 M0^2 \omega \cos[t \omega] \right. \\
& (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega] + \\
& M0^2 \sin[\alpha]^2 \sin[t \omega]^2 (4 \omega \sin[2 t \omega] + 2 \omega \sin[2 \alpha - 2 t \omega] - 2 \omega \sin[2 \alpha + 2 t \omega]) \Big) \Big) \Big) / \\
& \left(\sqrt{M0^2 (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega])} \sin[\alpha]^2 \sin[t \omega]^2 \right. \\
& \left. \Big) \Big) \Big) / \left(32 M0 (1 + \cos[2 \alpha]) \right. \\
& \left. \sqrt{M0^2 (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega])} \sin[\alpha]^2 \sin[t \omega]^2 \right) \Big) -
\end{aligned}$$

$$\begin{aligned}
& \left(i \cos[\alpha] \cot[\alpha] \csc[t \omega]^2 \left(4 M_0 - 2 M_0 \cos[2 t \omega] + M_0 \cos[2 \alpha - 2 t \omega] + M_0 \cos[2 \alpha + 2 t \omega] - \right. \right. \\
& \quad 2 M_0 \cos[\alpha - t \omega]^2 \sec[\alpha]^2 - 2 M_0 \cos[2 \alpha] \cos[\alpha - t \omega]^2 \sec[\alpha]^2 - 2 M_0 \sec[\alpha]^2 \sin[t \omega]^2 - \\
& \quad \left. \left. 2 M_0 \cos[2 \alpha] \sec[\alpha]^2 \sin[t \omega]^2 + 2 \sqrt{2} \sqrt{-M_0^2 (-6 - 2 \cos[2 \alpha] + \right.} \right. \\
& \quad \left. \left. 2 \cos[2 t \omega] - \cos[2 \alpha - 2 t \omega] - \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega]^2 \right) \right) \\
& \sqrt{\left(\frac{1}{1 + \cos[2 \alpha]} \left(-2 + 4 M_0 - 2 \cos[2 \alpha] - 2 M_0 \cos[2 t \omega] + M_0 \cos[2 \alpha - 2 t \omega] + \right. \right. \\
& \quad M_0 \cos[2 \alpha + 2 t \omega] + 2 \sqrt{2} \sqrt{M_0^2 (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega])} \sin[\alpha]^2 \sin[t \omega]^2 \right) \Big)} \\
& \left(4 M_0 \omega \cos[t \omega] \sec[\alpha]^2 \sin[t \omega] + 4 M_0 \omega \cos[2 \alpha] \cos[t \omega] \sec[\alpha]^2 \sin[t \omega] - \right. \\
& \quad 4 M_0 \omega \sin[2 t \omega] - 2 M_0 \omega \sin[2 \alpha - 2 t \omega] + 4 M_0 \omega \cos[\alpha - t \omega] \sec[\alpha]^2 \sin[\alpha - t \omega] + \\
& \quad 4 M_0 \omega \cos[2 \alpha] \cos[\alpha - t \omega] \sec[\alpha]^2 \sin[\alpha - t \omega] + \\
& \quad \left. 2 M_0 \omega \sin[2 \alpha + 2 t \omega] + \left(\sqrt{2} (2 M_0^2 \omega \cos[t \omega] \right. \right. \\
& \quad \left. \left. (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega] + \right. \right. \\
& \quad \left. \left. M_0^2 \sin[\alpha]^2 \sin[t \omega]^2 (4 \omega \sin[2 t \omega] + 2 \omega \sin[2 \alpha - 2 t \omega] - 2 \omega \sin[2 \alpha + 2 t \omega]) \right) \right) \Big) / \\
& \left(\sqrt{M_0^2 (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega])} \sin[\alpha]^2 \sin[t \omega]^2 \right. \\
& \quad \left. \right) \Big) \Big) / (32 M_0 (1 + \cos[2 \alpha])) \\
& \sqrt{M_0^2 (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega])} \sin[\alpha]^2 \sin[t \omega]^2 \Big) - \\
& \left(i \cos[\alpha] \cot[\alpha] \csc[t \omega]^2 \sqrt{\left(\frac{1}{1 + \cos[2 \alpha]} \left(-2 + 4 M_0 - 2 \cos[2 \alpha] - 2 M_0 \cos[2 t \omega] + \right. \right. \right. \\
& \quad M_0 \cos[2 \alpha - 2 t \omega] + M_0 \cos[2 \alpha + 2 t \omega] + 2 \sqrt{2} \sqrt{M_0^2 (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega])} \sin[\alpha]^2 \sin[t \omega]^2 \right) \Big)} \\
& \quad \left. \left. \left(-4 M_0 + 2 M_0 \cos[2 t \omega] - M_0 \cos[2 \alpha - 2 t \omega] - M_0 \cos[2 \alpha + 2 t \omega] + \right. \right. \right. \\
& \quad 2 M_0 \cos[\alpha - t \omega]^2 \sec[\alpha]^2 + 2 M_0 \cos[2 \alpha] \cos[\alpha - t \omega]^2 \sec[\alpha]^2 + \\
& \quad \left. \left. 2 M_0 \sec[\alpha]^2 \sin[t \omega]^2 + 2 M_0 \cos[2 \alpha] \sec[\alpha]^2 \sin[t \omega]^2 + 2 \sqrt{2} \sqrt{M_0^2 (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega])} \sin[\alpha]^2 \sin[t \omega]^2 \right) \right) \Big) \\
& \quad \left(-4 M_0 \omega \cos[t \omega] \sec[\alpha]^2 \sin[t \omega] - 4 M_0 \omega \cos[2 \alpha] \cos[t \omega] \sec[\alpha]^2 \sin[t \omega] + \right. \\
& \quad 4 M_0 \omega \sin[2 t \omega] + 2 M_0 \omega \sin[2 \alpha - 2 t \omega] - 4 M_0 \omega \cos[\alpha - t \omega] \sec[\alpha]^2 \sin[\alpha - t \omega] - \\
& \quad 4 M_0 \omega \cos[2 \alpha] \cos[\alpha - t \omega] \sec[\alpha]^2 \sin[\alpha - t \omega] - 2 M_0 \omega \sin[2 \alpha + 2 t \omega] + \\
& \quad \left. \left(\sqrt{2} (-2 M_0^2 \omega \cos[t \omega] (-6 - 2 \cos[2 \alpha] + 2 \cos[2 t \omega] - \cos[2 \alpha - 2 t \omega] - \cos[2 \alpha + 2 t \omega]) \right. \right. \\
& \quad \left. \left. \sin[\alpha]^2 \sin[t \omega] - M_0^2 \sin[\alpha]^2 \sin[t \omega]^2 \right. \right. \\
& \quad \left. \left. (-4 \omega \sin[2 t \omega] - 2 \omega \sin[2 \alpha - 2 t \omega] + 2 \omega \sin[2 \alpha + 2 t \omega]) \right) \right) \Big) / \\
& \left(\sqrt{(-M_0^2 (-6 - 2 \cos[2 \alpha] + 2 \cos[2 t \omega] - \cos[2 \alpha - 2 t \omega] - \cos[2 \alpha + 2 t \omega])} \sin[\alpha]^2 \sin[t \omega]^2 \right) \Big) \Big) / (32 M_0 (1 + \cos[2 \alpha]))
\end{aligned}$$

$$\begin{aligned}
& \sqrt{M\theta^2 (6 + 2 \cos[2\alpha] - 2 \cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2} \Big) + \\
& \left(i \cos[\alpha] \cot[\alpha] \csc[t\omega]^2 \sqrt{\left(\frac{1}{1 + \cos[2\alpha]} (-2 + 4M\theta - 2 \cos[2\alpha] - 2M\theta \cos[2t\omega] + \right. \right. \\
& \quad M\theta \cos[2\alpha - 2t\omega] + M\theta \cos[2\alpha + 2t\omega] - 2\sqrt{2} \sqrt{M\theta^2 (6 + 2 \cos[2\alpha] - 2 \cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2} \Big) \Big) \\
& \quad \left(4M\theta - 2M\theta \cos[2t\omega] + M\theta \cos[2\alpha - 2t\omega] + M\theta \cos[2\alpha + 2t\omega] - 2M\theta \cos[\alpha - t\omega]^2 \right. \\
& \quad \sec[\alpha]^2 - 2M\theta \cos[2\alpha] \cos[\alpha - t\omega]^2 \sec[\alpha]^2 - \\
& \quad 2M\theta \sec[\alpha]^2 \sin[t\omega]^2 - 2M\theta \cos[2\alpha] \sec[\alpha]^2 \sin[t\omega]^2 + 2\sqrt{2} \\
& \quad \left. \sqrt{M\theta^2 (6 + 2 \cos[2\alpha] - 2 \cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2} \right) \\
& \quad \left(4M\theta \omega \cos[t\omega] \sec[\alpha]^2 \sin[t\omega] + 4M\theta \omega \cos[2\alpha] \cos[t\omega] \sec[\alpha]^2 \sin[t\omega] - \right. \\
& \quad 4M\theta \omega \sin[2t\omega] - 2M\theta \omega \sin[2\alpha - 2t\omega] + 4M\theta \omega \cos[\alpha - t\omega] \sec[\alpha]^2 \sin[\alpha - t\omega] + \\
& \quad 4M\theta \omega \cos[2\alpha] \cos[\alpha - t\omega] \sec[\alpha]^2 \sin[\alpha - t\omega] + 2M\theta \omega \sin[2\alpha + 2t\omega] + \\
& \quad \left(\sqrt{2} (-2M\theta^2 \omega \cos[t\omega] (-6 - 2 \cos[2\alpha] + 2 \cos[2t\omega] - \cos[2\alpha - 2t\omega] - \cos[2\alpha + 2t\omega]) \right. \\
& \quad \sin[\alpha]^2 \sin[t\omega] - M\theta^2 \sin[\alpha]^2 \sin[t\omega]^2 \\
& \quad \left. \left. (-4\omega \sin[2t\omega] - 2\omega \sin[2\alpha - 2t\omega] + 2\omega \sin[2\alpha + 2t\omega]) \right) \right) \Big) / \\
& \quad \left(\sqrt{(-M\theta^2 (-6 - 2 \cos[2\alpha] + 2 \cos[2t\omega] - \cos[2\alpha - 2t\omega] - \cos[2\alpha + 2t\omega]) \right. \\
& \quad \sin[\alpha]^2 \sin[t\omega]^2) \Big) \Big) / \left(32M\theta (1 + \cos[2\alpha]) \right) \\
& \sqrt{M\theta^2 (6 + 2 \cos[2\alpha] - 2 \cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2} \Big) \\
\text{DerivativeMatrix21}[\alpha_, \omega_, t_, M\theta_] &:= - \left(\left(i M\theta \omega (1 + \cos[2\alpha]) \cos[t\omega] \sec[\alpha] \sin[t\omega] \right. \right. \\
& \quad \sqrt{\left(\frac{1}{1 + \cos[2\alpha]} (-2 + 4M\theta - 2 \cos[2\alpha] - 2M\theta \cos[2t\omega] + M\theta \cos[2\alpha - 2t\omega] + \right. \\
& \quad M\theta \cos[2\alpha + 2t\omega] - 2\sqrt{2} \sqrt{M\theta^2 (6 + 2 \cos[2\alpha] - 2 \cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2} \Big) \Big) \tan[\alpha] \Big) / \\
& \quad \left(\sqrt{M\theta^2 (6 + 2 \cos[2\alpha] - 2 \cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2} \right) \Big) \\
& + \left(i M\theta \omega (1 + \cos[2\alpha]) \cos[t\omega] \sec[\alpha] \sin[t\omega] \right. \\
& \quad \sqrt{\left(\frac{1}{1 + \cos[2\alpha]} (-2 + 4M\theta - 2 \cos[2\alpha] - 2M\theta \cos[2t\omega] + M\theta \cos[2\alpha - 2t\omega] + \right. \\
& \quad M\theta \cos[2\alpha + 2t\omega] + 2\sqrt{2} \sqrt{M\theta^2 (6 + 2 \cos[2\alpha] - 2 \cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2} \Big) \Big) \tan[\alpha] \Big) / \\
& \quad \left(\sqrt{M\theta^2 (6 + 2 \cos[2\alpha] - 2 \cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2} \right) \Big) + \\
& \left(i M\theta (1 + \cos[2\alpha]) \sec[\alpha] \sin[t\omega]^2 \right.
\end{aligned}$$

$$\begin{aligned}
& \sqrt{\left(\frac{1}{1 + \cos[2\alpha]} \left(-2 + 4M\theta - 2\cos[2\alpha] - 2M\theta\cos[2t\omega] + M\theta\cos[2\alpha - 2t\omega] + \right. \right. \\
& \quad \left. \left. M\theta\cos[2\alpha + 2t\omega] - 2\sqrt{2}\sqrt{M\theta^2(6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \right. \right. \\
& \quad \left. \left. \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega])\sin[\alpha]^2\sin[t\omega]^2} \right) \right) \\
& \quad (2M\theta^2\omega\cos[t\omega](6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega]) \\
& \quad \sin[\alpha]^2\sin[t\omega] + M\theta^2\sin[\alpha]^2\sin[t\omega]^2 \\
& \quad (4\omega\sin[2t\omega] + 2\omega\sin[2\alpha - 2t\omega] - 2\omega\sin[2\alpha + 2t\omega]))\tan[\alpha] \Bigg) / \left(4 \right. \\
& \quad \left. (M\theta^2(6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega])\sin[\alpha]^2\sin[t\omega]^2)^{3/2} \right) - \\
& \quad \left(i M\theta(1 + \cos[2\alpha])\sec[\alpha]\sin[t\omega]^2 \sqrt{\left(\frac{1}{1 + \cos[2\alpha]} \left(-2 + 4M\theta - 2\cos[2\alpha] - \right. \right. \right. \\
& \quad \left. \left. 2M\theta\cos[2t\omega] + M\theta\cos[2\alpha - 2t\omega] + M\theta\cos[2\alpha + 2t\omega] + 2\sqrt{2}\sqrt{M\theta^2(6 + 2\cos[2\alpha] - \right. \right. \\
& \quad \left. \left. 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega])\sin[\alpha]^2\sin[t\omega]^2} \right) \right) \\
& \quad (2M\theta^2\omega\cos[t\omega](6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega]) \\
& \quad \sin[\alpha]^2\sin[t\omega] + M\theta^2\sin[\alpha]^2\sin[t\omega]^2 \\
& \quad (4\omega\sin[2t\omega] + 2\omega\sin[2\alpha - 2t\omega] - 2\omega\sin[2\alpha + 2t\omega]))\tan[\alpha] \Bigg) / \left(4 \right. \\
& \quad \left. (M\theta^2(6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega])\sin[\alpha]^2\sin[t\omega]^2)^{3/2} \right) - \\
& \quad \left(i M\theta\sec[\alpha]\sin[t\omega]^2 \left(4M\theta\omega\sin[2t\omega] + 2M\theta\omega\sin[2\alpha - 2t\omega] - \right. \right. \\
& \quad \left. \left. 2M\theta\omega\sin[2\alpha + 2t\omega] - \left(\sqrt{2}(2M\theta^2\omega\cos[t\omega] \right. \right. \right. \\
& \quad \left. \left. (6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega])\sin[\alpha]^2\sin[t\omega] + \right. \right. \\
& \quad \left. \left. M\theta^2\sin[\alpha]^2\sin[t\omega]^2(4\omega\sin[2t\omega] + 2\omega\sin[2\alpha - 2t\omega] - 2\omega\sin[2\alpha + 2t\omega])) \right) \right) / \\
& \quad \left(\sqrt{M\theta^2(6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega])\sin[\alpha]^2\sin[t\omega]^2} \right. \\
& \quad \left. \left. \right) \tan[\alpha] \Bigg) / \right. \\
& \quad \left(4\sqrt{M\theta^2(6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega])\sin[\alpha]^2\sin[t\omega]^2} \right. \\
& \quad \left. \sqrt{\left(\frac{1}{1 + \cos[2\alpha]} \left(-2 + 4M\theta - 2\cos[2\alpha] - 2M\theta\cos[2t\omega] + M\theta\cos[2\alpha - 2t\omega] + \right. \right. \right. \\
& \quad \left. \left. M\theta\cos[2\alpha + 2t\omega] - 2\sqrt{2}\sqrt{M\theta^2(6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \right. \right. \\
& \quad \left. \left. \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega])\sin[\alpha]^2\sin[t\omega]^2} \right) \right) \Bigg) + \\
& \quad \left(i M\theta\sec[\alpha]\sin[t\omega]^2 \left(4M\theta\omega\sin[2t\omega] + 2M\theta\omega\sin[2\alpha - 2t\omega] - 2M\theta\omega\sin[2\alpha + 2t\omega] + \right. \right. \\
& \quad \left. \left(\sqrt{2}(2M\theta^2\omega\cos[t\omega](6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega]) \right. \right. \\
& \quad \left. \left. \sin[\alpha]^2\sin[t\omega] + M\theta^2\sin[\alpha]^2\sin[t\omega]^2 \right. \right. \\
& \quad \left. \left. (4\omega\sin[2t\omega] + 2\omega\sin[2\alpha - 2t\omega] - 2\omega\sin[2\alpha + 2t\omega])) \right) \right) / \\
& \quad \left(\sqrt{M\theta^2(6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega])\sin[\alpha]^2\sin[t\omega]^2} \right)
\end{aligned}$$

$$\begin{aligned}
& \left. \right) \left. \right) \tan[\alpha] \left. \right) \left. \right) / \\
& \left(4 \sqrt{M0^2 (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega]^2} \right. \\
& \left. \sqrt{\left(\frac{1}{1 + \cos[2 \alpha]} (-2 + 4 M0 - 2 \cos[2 \alpha] - 2 M0 \cos[2 t \omega] + M0 \cos[2 \alpha - 2 t \omega] + \right. \right.} \\
& \quad \left. \left. M0 \cos[2 \alpha + 2 t \omega] + 2 \sqrt{2} \sqrt{M0^2 (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \right. \right.} \\
& \quad \left. \left. \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega]^2) \right) \right) \left. \right) \left. \right) \\
& \text{DerivativeMatrix22}[\alpha_, \omega_, t_, M0_] := - \left(\left(\sqrt{\left(\frac{1}{1 + \cos[2 \alpha]} (-2 + 4 M0 - 2 \cos[2 \alpha] - 2 M0 \cos[2 t \omega] + \right. \right.} \right. \\
& \quad \left. \left. M0 \cos[2 \alpha - 2 t \omega] + M0 \cos[2 \alpha + 2 t \omega] - 2 \sqrt{2} \sqrt{M0^2 (6 + 2 \cos[2 \alpha] - \right. \right.} \\
& \quad \left. \left. 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega]^2) \right) \right) \left. \right) \\
& \quad \left(4 M0 - 2 M0 \cos[2 t \omega] + M0 \cos[2 \alpha - 2 t \omega] + M0 \cos[2 \alpha + 2 t \omega] - 2 M0 \cos[\alpha - t \omega]^2 \right. \\
& \quad \sec[\alpha]^2 - 2 M0 \cos[2 \alpha] \cos[\alpha - t \omega]^2 \sec[\alpha]^2 - 2 M0 \sec[\alpha]^2 \sin[t \omega]^2 - \\
& \quad 2 M0 \cos[2 \alpha] \sec[\alpha]^2 \sin[t \omega]^2 + 2 \sqrt{2} \sqrt{M0^2 (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega]^2} \left. \right) \\
& \quad \left(2 M0^2 \omega \cos[t \omega] (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega]) \right. \\
& \quad \sin[\alpha]^2 \sin[t \omega] + M0^2 \sin[\alpha]^2 \sin[t \omega]^2 \\
& \quad \left. \left. (4 \omega \sin[2 t \omega] + 2 \omega \sin[2 \alpha - 2 t \omega] - 2 \omega \sin[2 \alpha + 2 t \omega]) \right) \right) \left. \right) / \\
& \quad \left(16 (M0^2 (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega]) \right. \\
& \quad \left. \sin[\alpha]^2 \sin[t \omega]^2)^{3/2} \right) \left. \right) - \\
& \left(\sqrt{\left(\frac{1}{1 + \cos[2 \alpha]} (-2 + 4 M0 - 2 \cos[2 \alpha] - 2 M0 \cos[2 t \omega] + M0 \cos[2 \alpha - 2 t \omega] + \right. \right.} \right. \\
& \quad \left. \left. M0 \cos[2 \alpha + 2 t \omega] + 2 \sqrt{2} \sqrt{M0^2 (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \right. \right.} \\
& \quad \left. \left. \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega]^2) \right) \right) \left. \right) \\
& \quad \left(-4 M0 + 2 M0 \cos[2 t \omega] - M0 \cos[2 \alpha - 2 t \omega] - M0 \cos[2 \alpha + 2 t \omega] + \right. \\
& \quad 2 M0 \cos[\alpha - t \omega]^2 \sec[\alpha]^2 + 2 M0 \cos[2 \alpha] \cos[\alpha - t \omega]^2 \sec[\alpha]^2 + \\
& \quad 2 M0 \sec[\alpha]^2 \sin[t \omega]^2 + 2 M0 \cos[2 \alpha] \sec[\alpha]^2 \sin[t \omega]^2 + 2 \sqrt{2} \\
& \quad \left. \sqrt{M0^2 (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega]^2} \right) \\
& \quad \left(2 M0^2 \omega \cos[t \omega] (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega]) \right. \\
& \quad \sin[\alpha]^2 \sin[t \omega] + M0^2 \sin[\alpha]^2 \sin[t \omega]^2 \\
& \quad \left. \left. (4 \omega \sin[2 t \omega] + 2 \omega \sin[2 \alpha - 2 t \omega] - 2 \omega \sin[2 \alpha + 2 t \omega]) \right) \right) \left. \right) / \left(16 \right. \\
& \quad \left. (M0^2 (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega]^2)^{3/2} \right) + \\
& \quad \left(\left(4 M0 - 2 M0 \cos[2 t \omega] + M0 \cos[2 \alpha - 2 t \omega] + M0 \cos[2 \alpha + 2 t \omega] - \right. \right. \\
& \quad \left. \left. 2 M0 \cos[\alpha - t \omega]^2 \sec[\alpha]^2 - 2 M0 \cos[2 \alpha] \cos[\alpha - t \omega]^2 \sec[\alpha]^2 - \right. \right.
\end{aligned}$$

$$\begin{aligned}
& 2 M \theta \sec [\alpha]^2 \sin [t \omega]^2 - 2 M \theta \cos [2 \alpha] \sec [\alpha]^2 \sin [t \omega]^2 + 2 \sqrt{2} \\
& \sqrt{M \theta^2 (6 + 2 \cos [2 \alpha] - 2 \cos [2 t \omega] + \cos [2 \alpha - 2 t \omega] + \cos [2 \alpha + 2 t \omega]) \sin [\alpha]^2 \sin [t \omega]^2} \\
& (4 M \theta \omega \sin [2 t \omega] + 2 M \theta \omega \sin [2 \alpha - 2 t \omega] - 2 M \theta \omega \sin [2 \alpha + 2 t \omega] - \\
& (\sqrt{2} (2 M \theta^2 \omega \cos [t \omega] (6 + 2 \cos [2 \alpha] - 2 \cos [2 t \omega] + \cos [2 \alpha - 2 t \omega] + \cos [2 \alpha + 2 t \omega]) \\
& \sin [\alpha]^2 \sin [t \omega] + M \theta^2 \sin [\alpha]^2 \sin [t \omega]^2 \\
& (4 \omega \sin [2 t \omega] + 2 \omega \sin [2 \alpha - 2 t \omega] - 2 \omega \sin [2 \alpha + 2 t \omega])))) / \\
& (\sqrt{M \theta^2 (6 + 2 \cos [2 \alpha] - 2 \cos [2 t \omega] + \cos [2 \alpha - 2 t \omega] + \cos [2 \alpha + 2 t \omega]) \sin [\alpha]^2 \sin [t \omega]^2} \\
&)))) / (16 (1 + \cos [2 \alpha]) \\
& \sqrt{M \theta^2 (6 + 2 \cos [2 \alpha] - 2 \cos [2 t \omega] + \cos [2 \alpha - 2 t \omega] + \cos [2 \alpha + 2 t \omega]) \sin [\alpha]^2 \sin [t \omega]^2} \\
& \sqrt{\left(\frac{1}{1 + \cos [2 \alpha]} (-2 + 4 M \theta - 2 \cos [2 \alpha] - 2 M \theta \cos [2 t \omega] + M \theta \cos [2 \alpha - 2 t \omega] + \right. \\
& \left. M \theta \cos [2 \alpha + 2 t \omega] - 2 \sqrt{2} \sqrt{M \theta^2 (6 + 2 \cos [2 \alpha] - 2 \cos [2 t \omega] + \right. \\
& \left. \cos [2 \alpha - 2 t \omega] + \cos [2 \alpha + 2 t \omega]) \sin [\alpha]^2 \sin [t \omega]^2} \right) \right)} + \\
& ((-4 M \theta + 2 M \theta \cos [2 t \omega] - M \theta \cos [2 \alpha - 2 t \omega] - M \theta \cos [2 \alpha + 2 t \omega] + 2 M \theta \cos [\alpha - t \omega]^2 \sec [\alpha]^2 + \\
& 2 M \theta \cos [2 \alpha] \cos [\alpha - t \omega]^2 \sec [\alpha]^2 + 2 M \theta \sec [\alpha]^2 \sin [t \omega]^2 + \\
& 2 M \theta \cos [2 \alpha] \sec [\alpha]^2 \sin [t \omega]^2 + 2 \sqrt{2} \\
& \sqrt{M \theta^2 (6 + 2 \cos [2 \alpha] - 2 \cos [2 t \omega] + \cos [2 \alpha - 2 t \omega] + \cos [2 \alpha + 2 t \omega]) \sin [\alpha]^2 \sin [t \omega]^2} \\
& (4 M \theta \omega \sin [2 t \omega] + 2 M \theta \omega \sin [2 \alpha - 2 t \omega] - 2 M \theta \omega \sin [2 \alpha + 2 t \omega] + \\
& (\sqrt{2} (2 M \theta^2 \omega \cos [t \omega] (6 + 2 \cos [2 \alpha] - 2 \cos [2 t \omega] + \cos [2 \alpha - 2 t \omega] + \cos [2 \alpha + 2 t \omega]) \\
& \sin [\alpha]^2 \sin [t \omega] + M \theta^2 \sin [\alpha]^2 \sin [t \omega]^2 \\
& (4 \omega \sin [2 t \omega] + 2 \omega \sin [2 \alpha - 2 t \omega] - 2 \omega \sin [2 \alpha + 2 t \omega])))) / \\
& (\sqrt{M \theta^2 (6 + 2 \cos [2 \alpha] - 2 \cos [2 t \omega] + \cos [2 \alpha - 2 t \omega] + \cos [2 \alpha + 2 t \omega]) \sin [\alpha]^2 \sin [t \omega]^2} \\
&)))) / (16 (1 + \cos [2 \alpha]) \\
& \sqrt{M \theta^2 (6 + 2 \cos [2 \alpha] - 2 \cos [2 t \omega] + \cos [2 \alpha - 2 t \omega] + \cos [2 \alpha + 2 t \omega]) \sin [\alpha]^2 \sin [t \omega]^2} \\
& \sqrt{\left(\frac{1}{1 + \cos [2 \alpha]} (-2 + 4 M \theta - 2 \cos [2 \alpha] - 2 M \theta \cos [2 t \omega] + M \theta \cos [2 \alpha - 2 t \omega] + \right. \\
& \left. M \theta \cos [2 \alpha + 2 t \omega] + 2 \sqrt{2} \sqrt{M \theta^2 (6 + 2 \cos [2 \alpha] - 2 \cos [2 t \omega] + \right. \\
& \left. \cos [2 \alpha - 2 t \omega] + \cos [2 \alpha + 2 t \omega]) \sin [\alpha]^2 \sin [t \omega]^2} \right) \right)} + \\
& \left(\sqrt{\left(\frac{1}{1 + \cos [2 \alpha]} (-2 + 4 M \theta - 2 \cos [2 \alpha] - 2 M \theta \cos [2 t \omega] + M \theta \cos [2 \alpha - 2 t \omega] + \right. \right. \\
& \left. \left. M \theta \cos [2 \alpha + 2 t \omega] - 2 \sqrt{2} \sqrt{M \theta^2 (6 + 2 \cos [2 \alpha] - 2 \cos [2 t \omega] + \right. \right.
\end{aligned}$$

$$\begin{aligned}
& \left(\cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega] \right) \sin[\alpha]^2 \sin[t\omega]^2 \Big) \Big) \\
& \left(-4M\omega \cos[t\omega] \sec[\alpha]^2 \sin[t\omega] - 4M\omega \cos[2\alpha] \cos[t\omega] \sec[\alpha]^2 \sin[t\omega] + \right. \\
& 4M\omega \sin[2t\omega] + 2M\omega \sin[2\alpha - 2t\omega] - 4M\omega \cos[\alpha - t\omega] \sec[\alpha]^2 \sin[\alpha - t\omega] - \\
& 4M\omega \cos[2\alpha] \cos[\alpha - t\omega] \sec[\alpha]^2 \sin[\alpha - t\omega] - \\
& 2M\omega \sin[2\alpha + 2t\omega] + \left(\sqrt{2} \left(2M\omega^2 \cos[t\omega] \right. \right. \\
& \left. \left. (6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega] + \right. \right. \\
& \left. \left. M\omega^2 \sin[\alpha]^2 \sin[t\omega]^2 (4\omega \sin[2t\omega] + 2\omega \sin[2\alpha - 2t\omega] - 2\omega \sin[2\alpha + 2t\omega]) \right) \right) \Big) \Big) / \\
& \left(\sqrt{M\omega^2 (6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2} \right. \\
& \left. \left. \right) \right) \Big) / \\
& \left(8 \right. \\
& \left. \sqrt{M\omega^2 (6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2} \right) + \\
& \left(\sqrt{\left(\frac{1}{1 + \cos[2\alpha]} \left(-2 + 4M\omega - 2\cos[2\alpha] - 2M\omega \cos[2t\omega] + M\omega \cos[2\alpha - 2t\omega] + \right. \right. \right. \\
& \left. \left. M\omega \cos[2\alpha + 2t\omega] + 2\sqrt{2} \sqrt{M\omega^2 (6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \right. \right.} \right. \\
& \left. \left. \left. \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2 \right) \right) \right) \Big) \Big) \\
& \left(4M\omega \cos[t\omega] \sec[\alpha]^2 \sin[t\omega] + 4M\omega \cos[2\alpha] \cos[t\omega] \sec[\alpha]^2 \sin[t\omega] - \right. \\
& 4M\omega \sin[2t\omega] - 2M\omega \sin[2\alpha - 2t\omega] + 4M\omega \cos[\alpha - t\omega] \sec[\alpha]^2 \sin[\alpha - t\omega] + \\
& 4M\omega \cos[2\alpha] \cos[\alpha - t\omega] \sec[\alpha]^2 \sin[\alpha - t\omega] + \\
& 2M\omega \sin[2\alpha + 2t\omega] + \left(\sqrt{2} \left(2M\omega^2 \cos[t\omega] \right. \right. \\
& \left. \left. (6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega] + \right. \right. \\
& \left. \left. M\omega^2 \sin[\alpha]^2 \sin[t\omega]^2 (4\omega \sin[2t\omega] + 2\omega \sin[2\alpha - 2t\omega] - 2\omega \sin[2\alpha + 2t\omega]) \right) \right) \Big) \Big) / \\
& \left(\sqrt{M\omega^2 (6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2} \right. \\
& \left. \left. \right) \right) \Big) \Big) / \\
& \left(8 \right. \\
& \left. \sqrt{M\omega^2 (6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2} \right) \\
& \text{DerivativeMatrix}[\alpha_ , \omega_ , t_ , M\omega_] := \{ \{ \text{DerivativeMatrix11}[\alpha_ , \omega_ , t_ , M\omega_], \text{DerivativeMatrix12}[\alpha_ , \omega_ , t_ , M\omega_] \}, \\
& \{ \text{DerivativeMatrix21}[\alpha_ , \omega_ , t_ , M\omega_], \text{DerivativeMatrix22}[\alpha_ , \omega_ , t_ , M\omega_] \} \} \\
& \text{L11}[\alpha_ , \omega_ , t_ , M\omega_ , s_ , r_ , \theta_] := \\
& -\frac{1}{M\omega} 2i \sec[\alpha] \sin[t\omega]^2 \left(s + \left(\left(\sqrt{\left(\frac{1}{1 + \cos[2\alpha]} \left(-2 + 4M\omega - 2\cos[2\alpha] - 2M\omega \cos[2t\omega] + \right. \right. \right. \right. \right. \right. \right. \\
& \left. \left. M\omega \cos[2\alpha - 2t\omega] + M\omega \cos[2\alpha + 2t\omega] - 2\sqrt{2} \sqrt{M\omega^2 (6 + 2\cos[2\alpha] - \right. \right.} \right. \\
& \left. \left. \left. 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2 \right) \right) \right) \Big) \Big)
\end{aligned}$$

$$\begin{aligned}
& \left(4 M\theta - 2 M\theta \cos[2 t \omega] + M\theta \cos[2 \alpha - 2 t \omega] + M\theta \cos[2 \alpha + 2 t \omega] - \right. \\
& \quad 2 M\theta \cos[\alpha - t \omega]^2 \sec[\alpha]^2 - 2 M\theta \cos[2 \alpha] \cos[\alpha - t \omega]^2 \sec[\alpha]^2 - 2 M\theta \sec[\alpha]^2 \\
& \quad \sin[t \omega]^2 - 2 M\theta \cos[2 \alpha] \sec[\alpha]^2 \sin[t \omega]^2 + 2 \sqrt{2} \sqrt{M\theta^2 (6 + 2 \cos[2 \alpha] - \\
& \quad 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega]^2} \left. \right) \Bigg/ \\
& \left(8 \sqrt{M\theta^2 (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega])} \right. \\
& \quad \left. \sin[\alpha]^2 \sin[t \omega]^2 \right) + \\
& \left(\sqrt{\left(\frac{1}{1 + \cos[2 \alpha]} \left(-2 + 4 M\theta - 2 \cos[2 \alpha] - 2 M\theta \cos[2 t \omega] + M\theta \cos[2 \alpha - 2 t \omega] + \right. \right. \right. \\
& \quad \left. \left. M\theta \cos[2 \alpha + 2 t \omega] + 2 \sqrt{2} \sqrt{M\theta^2 (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \right. \right. \\
& \quad \left. \left. \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega]^2} \right) \right) \Bigg/ \\
& \left(-4 M\theta + 2 M\theta \cos[2 t \omega] - M\theta \cos[2 \alpha - 2 t \omega] - M\theta \cos[2 \alpha + 2 t \omega] + \right. \\
& \quad 2 M\theta \cos[\alpha - t \omega]^2 \sec[\alpha]^2 + 2 M\theta \cos[2 \alpha] \cos[\alpha - t \omega]^2 \sec[\alpha]^2 + 2 M\theta \sec[\alpha]^2 \\
& \quad \sin[t \omega]^2 + 2 M\theta \cos[2 \alpha] \sec[\alpha]^2 \sin[t \omega]^2 + 2 \sqrt{2} \sqrt{M\theta^2 (6 + 2 \cos[2 \alpha] - \\
& \quad 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega]^2} \left. \right) \Bigg/ \\
& \left(8 \sqrt{M\theta^2 (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega])} \right. \\
& \quad \left. \sin[\alpha]^2 \sin[t \omega]^2 \right) \Bigg) \\
& \left(s \left(\left(-4 M\theta + 2 M\theta \cos[2 t \omega] - M\theta \cos[2 \alpha - 2 t \omega] - M\theta \cos[2 \alpha + 2 t \omega] + 2 M\theta \cos[\alpha - t \omega]^2 \right. \right. \right. \\
& \quad \left. \left. \sec[\alpha]^2 + 2 M\theta \cos[2 \alpha] \cos[\alpha - t \omega]^2 \sec[\alpha]^2 + 2 M\theta \sec[\alpha]^2 \sin[t \omega]^2 + \right. \right. \\
& \quad \left. \left. 2 M\theta \cos[2 \alpha] \sec[\alpha]^2 \sin[t \omega]^2 + 2 \sqrt{2} \sqrt{-M\theta^2 (-6 - 2 \cos[2 \alpha] + \right. \right. \\
& \quad \left. \left. 2 \cos[2 t \omega] - \cos[2 \alpha - 2 t \omega] - \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega]^2} \right) \right) \Bigg/ \\
& \quad \sqrt{\left(\frac{1}{1 + \cos[2 \alpha]} \left(-2 + 4 M\theta - 2 \cos[2 \alpha] - 2 M\theta \cos[2 t \omega] + M\theta \cos[2 \alpha - 2 t \omega] + \right. \right. \\
& \quad \left. \left. M\theta \cos[2 \alpha + 2 t \omega] - 2 \sqrt{2} \sqrt{M\theta^2 (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \right. \right. \\
& \quad \left. \left. \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega]^2} \right) \right) \Bigg/ \\
& \left(8 \sqrt{M\theta^2 (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega])} \right. \\
& \quad \left. \sin[\alpha]^2 \sin[t \omega]^2 \right) + \\
& \left(\left(4 M\theta - 2 M\theta \cos[2 t \omega] + M\theta \cos[2 \alpha - 2 t \omega] + M\theta \cos[2 \alpha + 2 t \omega] - \right. \right. \\
& \quad \left. \left. 2 M\theta \cos[\alpha - t \omega]^2 \sec[\alpha]^2 - 2 M\theta \cos[2 \alpha] \cos[\alpha - t \omega]^2 \sec[\alpha]^2 - 2 M\theta \sec[\alpha]^2 \right. \right. \\
& \quad \left. \left. \sin[t \omega]^2 - 2 M\theta \cos[2 \alpha] \sec[\alpha]^2 \sin[t \omega]^2 + 2 \sqrt{2} \sqrt{-M\theta^2 (-6 - 2 \cos[2 \alpha] + \right. \right. \\
& \quad \left. \left. 2 \cos[2 t \omega] - \cos[2 \alpha - 2 t \omega] - \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega]^2} \right) \right) \Bigg/ \\
& \quad \sqrt{\left(\frac{1}{1 + \cos[2 \alpha]} \left(-2 + 4 M\theta - 2 \cos[2 \alpha] - 2 M\theta \cos[2 t \omega] + M\theta \cos[2 \alpha - 2 t \omega] + \right. \right. \\
& \quad \left. \left. M\theta \cos[2 \alpha + 2 t \omega] + 2 \sqrt{2} \sqrt{M\theta^2 (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \right. \right. \\
& \quad \left. \left. \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega]^2} \right) \right) \Bigg/ \\
& \left(8 \sqrt{M\theta^2 (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega])} \right. \\
& \quad \left. \sin[\alpha]^2 \sin[t \omega]^2 \right) \Bigg)
\end{aligned}$$

$$\begin{aligned}
& \sin[\alpha]^2 \sin[t \omega]^2) \Big) + \\
& e^{-i \theta} r \left(\left(i \cos[\alpha] \cot[\alpha] \csc[t \omega]^2 \left(-4 M0 + 2 M0 \cos[2 t \omega] - M0 \cos[2 \alpha - 2 t \omega] - \right. \right. \right. \\
& \quad M0 \cos[2 \alpha + 2 t \omega] + 2 M0 \cos[\alpha - t \omega]^2 \sec[\alpha]^2 + \\
& \quad 2 M0 \cos[2 \alpha] \cos[\alpha - t \omega]^2 \sec[\alpha]^2 + 2 M0 \sec[\alpha]^2 \sin[t \omega]^2 + \\
& \quad 2 M0 \cos[2 \alpha] \sec[\alpha]^2 \sin[t \omega]^2 + 2 \sqrt{2} \sqrt{-M0^2 (-6 - 2 \cos[2 \alpha] + \\
& \quad 2 \cos[2 t \omega] - \cos[2 \alpha - 2 t \omega] - \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega]^2} \Big) \\
& \quad \sqrt{\left(\frac{1}{1 + \cos[2 \alpha]} \left(-2 + 4 M0 - 2 \cos[2 \alpha] - 2 M0 \cos[2 t \omega] + M0 \cos[2 \alpha - 2 t \omega] + \right. \right.} \\
& \quad \quad M0 \cos[2 \alpha + 2 t \omega] - 2 \sqrt{2} \sqrt{M0^2 (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \\
& \quad \quad \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega]^2} \Big) \Big) \Big) \\
& \quad \left(4 M0 - 2 M0 \cos[2 t \omega] + M0 \cos[2 \alpha - 2 t \omega] + M0 \cos[2 \alpha + 2 t \omega] - \right. \\
& \quad 2 M0 \cos[\alpha - t \omega]^2 \sec[\alpha]^2 - 2 M0 \cos[2 \alpha] \cos[\alpha - t \omega]^2 \sec[\alpha]^2 - 2 M0 \sec[\alpha]^2 \\
& \quad \sin[t \omega]^2 - 2 M0 \cos[2 \alpha] \sec[\alpha]^2 \sin[t \omega]^2 + 2 \sqrt{2} \sqrt{M0^2 (6 + 2 \cos[2 \alpha] - \\
& \quad 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega]^2} \Big) \Big) \Big) / \\
& \quad \left(32 M0 (1 + \cos[2 \alpha]) \sqrt{M0^2 (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \right.} \\
& \quad \quad \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega]^2} \Big) - \\
& \quad \left(i \cos[\alpha] \cot[\alpha] \csc[t \omega]^2 \left(4 M0 - 2 M0 \cos[2 t \omega] + M0 \cos[2 \alpha - 2 t \omega] + \right. \right. \\
& \quad M0 \cos[2 \alpha + 2 t \omega] - 2 M0 \cos[\alpha - t \omega]^2 \sec[\alpha]^2 - \\
& \quad 2 M0 \cos[2 \alpha] \cos[\alpha - t \omega]^2 \sec[\alpha]^2 - 2 M0 \sec[\alpha]^2 \sin[t \omega]^2 - \\
& \quad 2 M0 \cos[2 \alpha] \sec[\alpha]^2 \sin[t \omega]^2 + 2 \sqrt{2} \sqrt{-M0^2 (-6 - 2 \cos[2 \alpha] + \\
& \quad 2 \cos[2 t \omega] - \cos[2 \alpha - 2 t \omega] - \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega]^2} \Big) \\
& \quad \sqrt{\left(\frac{1}{1 + \cos[2 \alpha]} \left(-2 + 4 M0 - 2 \cos[2 \alpha] - 2 M0 \cos[2 t \omega] + M0 \cos[2 \alpha - 2 t \omega] + \right. \right.} \\
& \quad \quad M0 \cos[2 \alpha + 2 t \omega] + 2 \sqrt{2} \sqrt{M0^2 (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \\
& \quad \quad \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega]^2} \Big) \Big) \Big) \\
& \quad \left(-4 M0 + 2 M0 \cos[2 t \omega] - M0 \cos[2 \alpha - 2 t \omega] - M0 \cos[2 \alpha + 2 t \omega] + \right. \\
& \quad 2 M0 \cos[\alpha - t \omega]^2 \sec[\alpha]^2 + 2 M0 \cos[2 \alpha] \cos[\alpha - t \omega]^2 \sec[\alpha]^2 + 2 M0 \sec[\alpha]^2 \\
& \quad \sin[t \omega]^2 + 2 M0 \cos[2 \alpha] \sec[\alpha]^2 \sin[t \omega]^2 + 2 \sqrt{2} \sqrt{M0^2 (6 + 2 \cos[2 \alpha] - \\
& \quad 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega]^2} \Big) \Big) \Big) / \\
& \quad \left(32 M0 (1 + \cos[2 \alpha]) \sqrt{M0^2 (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \right.} \\
& \quad \quad \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega]^2} \Big) \Big) \Big) + \\
& \quad \left(\left(i \cos[\alpha] \cot[\alpha] \csc[t \omega]^2 \left(-4 M0 + 2 M0 \cos[2 t \omega] - M0 \cos[2 \alpha - 2 t \omega] - \right. \right. \right. \\
& \quad M0 \cos[2 \alpha + 2 t \omega] + 2 M0 \cos[\alpha - t \omega]^2 \sec[\alpha]^2 + \\
& \quad 2 M0 \cos[2 \alpha] \cos[\alpha - t \omega]^2 \sec[\alpha]^2 + 2 M0 \sec[\alpha]^2 \sin[t \omega]^2 + \\
& \quad 2 M0 \cos[2 \alpha] \sec[\alpha]^2 \sin[t \omega]^2 + 2 \sqrt{2} \sqrt{-M0^2 (-6 - 2 \cos[2 \alpha] +
\end{aligned}$$

$$\begin{aligned}
& \left(2 \cos[2 t \omega] - \cos[2 \alpha - 2 t \omega] - \cos[2 \alpha + 2 t \omega] \right) \sin[\alpha]^2 \sin[t \omega]^2 \Big) \\
& \sqrt{\left(\frac{1}{1 + \cos[2 \alpha]} \left(-2 + 4 M0 - 2 \cos[2 \alpha] - 2 M0 \cos[2 t \omega] + M0 \cos[2 \alpha - 2 t \omega] + \right. \right. \\
& \quad M0 \cos[2 \alpha + 2 t \omega] - 2 \sqrt{2} \sqrt{M0^2 (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega]^2} \Big) \Big) \\
& \left(4 M0 - 2 M0 \cos[2 t \omega] + M0 \cos[2 \alpha - 2 t \omega] + M0 \cos[2 \alpha + 2 t \omega] - \right. \\
& \quad 2 M0 \cos[\alpha - t \omega]^2 \sec[\alpha]^2 - 2 M0 \cos[2 \alpha] \cos[\alpha - t \omega]^2 \sec[\alpha]^2 - \\
& \quad 2 M0 \sec[\alpha]^2 \sin[t \omega]^2 - 2 M0 \cos[2 \alpha] \sec[\alpha]^2 \sin[t \omega]^2 + \\
& \quad 2 \sqrt{2} \sqrt{M0^2 (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega]^2} \Big) \Big) / \\
& \left(32 M0 (1 + \cos[2 \alpha]) \sqrt{M0^2 (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega]^2} \right) - \\
& \left(i \cos[\alpha] \cot[\alpha] \csc[t \omega]^2 \left(4 M0 - 2 M0 \cos[2 t \omega] + M0 \cos[2 \alpha - 2 t \omega] + \right. \right. \\
& \quad M0 \cos[2 \alpha + 2 t \omega] - 2 M0 \cos[\alpha - t \omega]^2 \sec[\alpha]^2 - \\
& \quad 2 M0 \cos[2 \alpha] \cos[\alpha - t \omega]^2 \sec[\alpha]^2 - 2 M0 \sec[\alpha]^2 \sin[t \omega]^2 - \\
& \quad 2 M0 \cos[2 \alpha] \sec[\alpha]^2 \sin[t \omega]^2 + 2 \sqrt{2} \sqrt{-M0^2 (-6 - 2 \cos[2 \alpha] + 2 \cos[2 t \omega] - \cos[2 \alpha - 2 t \omega] - \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega]^2} \Big) \Big) \\
& \sqrt{\left(\frac{1}{1 + \cos[2 \alpha]} \left(-2 + 4 M0 - 2 \cos[2 \alpha] - 2 M0 \cos[2 t \omega] + M0 \cos[2 \alpha - 2 t \omega] + \right. \right. \\
& \quad M0 \cos[2 \alpha + 2 t \omega] + 2 \sqrt{2} \sqrt{M0^2 (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega]^2} \Big) \Big) \\
& \left(-4 M0 + 2 M0 \cos[2 t \omega] - M0 \cos[2 \alpha - 2 t \omega] - M0 \cos[2 \alpha + 2 t \omega] + \right. \\
& \quad 2 M0 \cos[\alpha - t \omega]^2 \sec[\alpha]^2 + 2 M0 \cos[2 \alpha] \cos[\alpha - t \omega]^2 \sec[\alpha]^2 + \\
& \quad 2 M0 \sec[\alpha]^2 \sin[t \omega]^2 + 2 M0 \cos[2 \alpha] \sec[\alpha]^2 \sin[t \omega]^2 + \\
& \quad 2 \sqrt{2} \sqrt{M0^2 (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega]^2} \Big) \Big) / \\
& \left(32 M0 (1 + \cos[2 \alpha]) \sqrt{M0^2 (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega]^2} \right) \Big) \\
& \left(e^{i \theta} r \left(\left(-4 M0 + 2 M0 \cos[2 t \omega] - M0 \cos[2 \alpha - 2 t \omega] - M0 \cos[2 \alpha + 2 t \omega] + \right. \right. \right. \\
& \quad 2 M0 \cos[\alpha - t \omega]^2 \sec[\alpha]^2 + 2 M0 \cos[2 \alpha] \cos[\alpha - t \omega]^2 \sec[\alpha]^2 + 2 M0 \sec[\alpha]^2 \sin[t \omega]^2 \\
& \quad \sin[t \omega]^2 + 2 M0 \cos[2 \alpha] \sec[\alpha]^2 \sin[t \omega]^2 + 2 \sqrt{2} \sqrt{-M0^2 (-6 - 2 \cos[2 \alpha] + 2 \cos[2 t \omega] - \cos[2 \alpha - 2 t \omega] - \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega]^2} \Big) \Big) \\
& \sqrt{\left(\frac{1}{1 + \cos[2 \alpha]} \left(-2 + 4 M0 - 2 \cos[2 \alpha] - 2 M0 \cos[2 t \omega] + M0 \cos[2 \alpha - 2 t \omega] + \right. \right. \\
& \quad M0 \cos[2 \alpha + 2 t \omega] - 2 \sqrt{2} \sqrt{M0^2 (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega]^2} \Big) \Big)
\end{aligned}$$

$$\begin{aligned}
& \left. \left. \left. \left. \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega] \right) \sin[\alpha]^2 \sin[t\omega]^2 \right) \right) \right) \Bigg/ \\
& \left(8 \sqrt{M\theta^2 (6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega])} \right. \\
& \quad \left. \sin[\alpha]^2 \sin[t\omega]^2 \right) + \\
& \left(\left(4M\theta - 2M\theta \cos[2t\omega] + M\theta \cos[2\alpha - 2t\omega] + M\theta \cos[2\alpha + 2t\omega] - \right. \right. \\
& \quad \left. \left. 2M\theta \cos[\alpha - t\omega]^2 \sec[\alpha]^2 - 2M\theta \cos[2\alpha] \cos[\alpha - t\omega]^2 \sec[\alpha]^2 - 2M\theta \sec[\alpha]^2 \right. \right. \\
& \quad \left. \left. \sin[t\omega]^2 - 2M\theta \cos[2\alpha] \sec[\alpha]^2 \sin[t\omega]^2 + 2\sqrt{2} \sqrt{-M\theta^2 (-6 - 2\cos[2\alpha] + \right. \right. \\
& \quad \left. \left. 2\cos[2t\omega] - \cos[2\alpha - 2t\omega] - \cos[2\alpha + 2t\omega])} \sin[\alpha]^2 \sin[t\omega]^2 \right) \right) \\
& \quad \sqrt{\left(\frac{1}{1 + \cos[2\alpha]} (-2 + 4M\theta - 2\cos[2\alpha] - 2M\theta \cos[2t\omega] + M\theta \cos[2\alpha - 2t\omega] + \right.} \\
& \quad \left. M\theta \cos[2\alpha + 2t\omega] + 2\sqrt{2} \sqrt{M\theta^2 (6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \right.} \\
& \quad \left. \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega])} \sin[\alpha]^2 \sin[t\omega]^2 \right) \Bigg) \Bigg/ \\
& \left(8 \sqrt{M\theta^2 (6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega])} \right. \\
& \quad \left. \sin[\alpha]^2 \sin[t\omega]^2 \right) \Bigg) + \\
& s \left(\left(i \cos[\alpha] \cot[\alpha] \csc[t\omega]^2 (-4M\theta + 2M\theta \cos[2t\omega] - M\theta \cos[2\alpha - 2t\omega] - \right. \right. \\
& \quad M\theta \cos[2\alpha + 2t\omega] + 2M\theta \cos[\alpha - t\omega]^2 \sec[\alpha]^2 + \\
& \quad 2M\theta \cos[2\alpha] \cos[\alpha - t\omega]^2 \sec[\alpha]^2 + 2M\theta \sec[\alpha]^2 \sin[t\omega]^2 + \\
& \quad 2M\theta \cos[2\alpha] \sec[\alpha]^2 \sin[t\omega]^2 + 2\sqrt{2} \sqrt{-M\theta^2 (-6 - 2\cos[2\alpha] + \\
& \quad 2\cos[2t\omega] - \cos[2\alpha - 2t\omega] - \cos[2\alpha + 2t\omega])} \sin[\alpha]^2 \sin[t\omega]^2) \Bigg) \\
& \quad \sqrt{\left(\frac{1}{1 + \cos[2\alpha]} (-2 + 4M\theta - 2\cos[2\alpha] - 2M\theta \cos[2t\omega] + M\theta \cos[2\alpha - 2t\omega] + \right.} \\
& \quad \left. M\theta \cos[2\alpha + 2t\omega] - 2\sqrt{2} \sqrt{M\theta^2 (6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \right.} \\
& \quad \left. \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega])} \sin[\alpha]^2 \sin[t\omega]^2 \right) \Bigg) \Bigg) \\
& \left(4M\theta - 2M\theta \cos[2t\omega] + M\theta \cos[2\alpha - 2t\omega] + M\theta \cos[2\alpha + 2t\omega] - \right. \\
& \quad \left. 2M\theta \cos[\alpha - t\omega]^2 \sec[\alpha]^2 - 2M\theta \cos[2\alpha] \cos[\alpha - t\omega]^2 \sec[\alpha]^2 - 2M\theta \sec[\alpha]^2 \right. \\
& \quad \left. \sin[t\omega]^2 - 2M\theta \cos[2\alpha] \sec[\alpha]^2 \sin[t\omega]^2 + 2\sqrt{2} \sqrt{M\theta^2 (6 + 2\cos[2\alpha] - \right.} \\
& \quad \left. 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega])} \sin[\alpha]^2 \sin[t\omega]^2) \Bigg) \Bigg/ \\
& \left(32M\theta (1 + \cos[2\alpha]) \sqrt{M\theta^2 (6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \right.} \right. \\
& \quad \left. \cos[2\alpha + 2t\omega])} \sin[\alpha]^2 \sin[t\omega]^2) \right) - \\
& \left(i \cos[\alpha] \cot[\alpha] \csc[t\omega]^2 (4M\theta - 2M\theta \cos[2t\omega] + M\theta \cos[2\alpha - 2t\omega] + \right. \\
& \quad M\theta \cos[2\alpha + 2t\omega] - 2M\theta \cos[\alpha - t\omega]^2 \sec[\alpha]^2 - \\
& \quad 2M\theta \cos[2\alpha] \cos[\alpha - t\omega]^2 \sec[\alpha]^2 - 2M\theta \sec[\alpha]^2 \sin[t\omega]^2 - \\
& \quad 2M\theta \cos[2\alpha] \sec[\alpha]^2 \sin[t\omega]^2 + 2\sqrt{2} \sqrt{-M\theta^2 (-6 - 2\cos[2\alpha] + \\
& \quad 2\cos[2t\omega] - \cos[2\alpha - 2t\omega] - \cos[2\alpha + 2t\omega])} \sin[\alpha]^2 \sin[t\omega]^2) \Bigg) \\
& \quad \sqrt{\left(\frac{1}{1 + \cos[2\alpha]} (-2 + 4M\theta - 2\cos[2\alpha] - 2M\theta \cos[2t\omega] + M\theta \cos[2\alpha - 2t\omega] + \right.}
\end{aligned}$$

$$\begin{aligned}
& \left(M0 \cos[2\alpha + 2t\omega] + 2\sqrt{2} \sqrt{M0^2 (6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2} \right) \\
& \left(-4M0 + 2M0 \cos[2t\omega] - M0 \cos[2\alpha - 2t\omega] - M0 \cos[2\alpha + 2t\omega] + \right. \\
& \quad 2M0 \cos[\alpha - t\omega]^2 \sec[\alpha]^2 + 2M0 \cos[2\alpha] \cos[\alpha - t\omega]^2 \sec[\alpha]^2 + 2M0 \sec[\alpha]^2 \sin[t\omega]^2 + 2M0 \cos[2\alpha] \sec[\alpha]^2 \sin[t\omega]^2 + 2\sqrt{2} \sqrt{M0^2 (6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2} \left. \right) \Bigg) / \\
& \left(32M0 (1 + \cos[2\alpha]) \sqrt{M0^2 (6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2} \right) \Bigg) + \\
& i \left(\left(i \cos[\alpha] \cot[\alpha] \csc[t\omega]^2 \left(-4M0 + 2M0 \cos[2t\omega] - M0 \cos[2\alpha - 2t\omega] - \right. \right. \right. \\
& \quad M0 \cos[2\alpha + 2t\omega] + 2M0 \cos[\alpha - t\omega]^2 \sec[\alpha]^2 + \\
& \quad 2M0 \cos[2\alpha] \cos[\alpha - t\omega]^2 \sec[\alpha]^2 + 2M0 \sec[\alpha]^2 \sin[t\omega]^2 + \\
& \quad 2M0 \cos[2\alpha] \sec[\alpha]^2 \sin[t\omega]^2 + 2\sqrt{2} \sqrt{-M0^2 (-6 - 2\cos[2\alpha] + 2\cos[2t\omega] - \cos[2\alpha - 2t\omega] - \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2} \left. \right) \right. \\
& \quad \sqrt{\left(\frac{1}{1 + \cos[2\alpha]} \left(-2 + 4M0 - 2\cos[2\alpha] - 2M0 \cos[2t\omega] + M0 \cos[2\alpha - 2t\omega] + \right. \right.} \\
& \quad \quad M0 \cos[2\alpha + 2t\omega] - 2\sqrt{2} \sqrt{M0^2 (6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2} \left. \right) \Bigg) \\
& \quad \left(4M0 - 2M0 \cos[2t\omega] + M0 \cos[2\alpha - 2t\omega] + M0 \cos[2\alpha + 2t\omega] - \right. \\
& \quad 2M0 \cos[\alpha - t\omega]^2 \sec[\alpha]^2 - 2M0 \cos[2\alpha] \cos[\alpha - t\omega]^2 \sec[\alpha]^2 - 2M0 \sec[\alpha]^2 \sin[t\omega]^2 - \\
& \quad 2M0 \cos[2\alpha] \sec[\alpha]^2 \sin[t\omega]^2 + 2\sqrt{2} \sqrt{M0^2 (6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2} \left. \right) \Bigg) / \\
& \left(32M0 (1 + \cos[2\alpha]) \sqrt{M0^2 (6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2} \right) - \\
& \left(i \cos[\alpha] \cot[\alpha] \csc[t\omega]^2 \left(4M0 - 2M0 \cos[2t\omega] + M0 \cos[2\alpha - 2t\omega] + \right. \right. \\
& \quad M0 \cos[2\alpha + 2t\omega] - 2M0 \cos[\alpha - t\omega]^2 \sec[\alpha]^2 - \\
& \quad 2M0 \cos[2\alpha] \cos[\alpha - t\omega]^2 \sec[\alpha]^2 - 2M0 \sec[\alpha]^2 \sin[t\omega]^2 - \\
& \quad 2M0 \cos[2\alpha] \sec[\alpha]^2 \sin[t\omega]^2 + 2\sqrt{2} \sqrt{-M0^2 (-6 - 2\cos[2\alpha] + 2\cos[2t\omega] - \cos[2\alpha - 2t\omega] - \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2} \left. \right) \Bigg) \\
& \quad \sqrt{\left(\frac{1}{1 + \cos[2\alpha]} \left(-2 + 4M0 - 2\cos[2\alpha] - 2M0 \cos[2t\omega] + M0 \cos[2\alpha - 2t\omega] + \right. \right.} \\
& \quad \quad M0 \cos[2\alpha + 2t\omega] + 2\sqrt{2} \sqrt{M0^2 (6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2} \left. \right) \Bigg) \\
& \quad \left(-4M0 + 2M0 \cos[2t\omega] - M0 \cos[2\alpha - 2t\omega] - M0 \cos[2\alpha + 2t\omega] + \right. \\
& \quad 2M0 \cos[\alpha - t\omega]^2 \sec[\alpha]^2 + 2M0 \cos[2\alpha] \cos[\alpha - t\omega]^2 \sec[\alpha]^2 + 2M0 \sec[\alpha]^2 \sin[t\omega]^2 + 2M0 \cos[2\alpha] \sec[\alpha]^2 \sin[t\omega]^2 + 2\sqrt{2} \sqrt{M0^2 (6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2} \left. \right) \Bigg) / \\
& \left(32M0 (1 + \cos[2\alpha]) \sqrt{M0^2 (6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2} \right) \Bigg)
\end{aligned}$$

$$\begin{aligned}
& \left. \left(2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega] \right) \sin[\alpha]^2 \sin[t \omega]^2 \right) \Bigg) / \\
& \left(32 M_0 \left(1 + \cos[2 \alpha] \right) \sqrt{M_0^2 \left(6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \right. \right.} \\
& \quad \left. \left. \cos[2 \alpha + 2 t \omega] \right) \sin[\alpha]^2 \sin[t \omega]^2 \right) \Bigg) \\
& \left(- \left(\left(-4 M_0 + 2 M_0 \cos[2 t \omega] - M_0 \cos[2 \alpha - 2 t \omega] - M_0 \cos[2 \alpha + 2 t \omega] + \right. \right. \right. \\
& \quad \left. \left. 2 M_0 \cos[\alpha - t \omega]^2 \sec[\alpha]^2 + 2 M_0 \cos[2 \alpha] \cos[\alpha - t \omega]^2 \sec[\alpha]^2 + 2 M_0 \sec[\alpha]^2 \right. \right. \\
& \quad \left. \left. \sin[t \omega]^2 + 2 M_0 \cos[2 \alpha] \sec[\alpha]^2 \sin[t \omega]^2 + 2 \sqrt{2} \sqrt{-M_0^2 \left(-6 - 2 \cos[2 \alpha] + \right. \right. \right. \\
& \quad \left. \left. 2 \cos[2 t \omega] - \cos[2 \alpha - 2 t \omega] - \cos[2 \alpha + 2 t \omega] \right) \sin[\alpha]^2 \sin[t \omega]^2 \right) \right) \\
& \quad \sqrt{\left(\frac{1}{1 + \cos[2 \alpha]} \left(-2 + 4 M_0 - 2 \cos[2 \alpha] - 2 M_0 \cos[2 t \omega] + M_0 \cos[2 \alpha - 2 t \omega] + \right. \right.} \\
& \quad \left. \left. M_0 \cos[2 \alpha + 2 t \omega] - 2 \sqrt{2} \sqrt{M_0^2 \left(6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \right. \right. \right.} \\
& \quad \left. \left. \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega] \right) \sin[\alpha]^2 \sin[t \omega]^2 \right) \Bigg) \\
& \quad \left(2 M_0^2 \omega \cos[t \omega] \left(6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \right. \right. \\
& \quad \left. \left. \cos[2 \alpha + 2 t \omega] \right) \sin[\alpha]^2 \sin[t \omega] + M_0^2 \sin[\alpha]^2 \sin[t \omega]^2 \right. \\
& \quad \left. \left(4 \omega \sin[2 t \omega] + 2 \omega \sin[2 \alpha - 2 t \omega] - 2 \omega \sin[2 \alpha + 2 t \omega] \right) \right) \Bigg) / \\
& \left(16 \left(M_0^2 \left(6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega] \right) \right. \right. \\
& \quad \left. \left. \sin[\alpha]^2 \sin[t \omega]^2 \right)^{3/2} \right) \Bigg) - \\
& \left(\left(4 M_0 - 2 M_0 \cos[2 t \omega] + M_0 \cos[2 \alpha - 2 t \omega] + M_0 \cos[2 \alpha + 2 t \omega] - \right. \right. \\
& \quad \left. \left. 2 M_0 \cos[\alpha - t \omega]^2 \sec[\alpha]^2 - 2 M_0 \cos[2 \alpha] \cos[\alpha - t \omega]^2 \sec[\alpha]^2 - 2 M_0 \sec[\alpha]^2 \right. \right. \\
& \quad \left. \left. \sin[t \omega]^2 - 2 M_0 \cos[2 \alpha] \sec[\alpha]^2 \sin[t \omega]^2 + 2 \sqrt{2} \sqrt{-M_0^2 \left(-6 - 2 \cos[2 \alpha] + \right. \right. \right. \\
& \quad \left. \left. 2 \cos[2 t \omega] - \cos[2 \alpha - 2 t \omega] - \cos[2 \alpha + 2 t \omega] \right) \sin[\alpha]^2 \sin[t \omega]^2 \right) \right) \\
& \quad \sqrt{\left(\frac{1}{1 + \cos[2 \alpha]} \left(-2 + 4 M_0 - 2 \cos[2 \alpha] - 2 M_0 \cos[2 t \omega] + M_0 \cos[2 \alpha - 2 t \omega] + \right. \right.} \\
& \quad \left. \left. M_0 \cos[2 \alpha + 2 t \omega] + 2 \sqrt{2} \sqrt{M_0^2 \left(6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \right. \right. \right.} \\
& \quad \left. \left. \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega] \right) \sin[\alpha]^2 \sin[t \omega]^2 \right) \Bigg) \\
& \quad \left(2 M_0^2 \omega \cos[t \omega] \left(6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \right. \right. \\
& \quad \left. \left. \cos[2 \alpha + 2 t \omega] \right) \sin[\alpha]^2 \sin[t \omega] + M_0^2 \sin[\alpha]^2 \sin[t \omega]^2 \right. \\
& \quad \left. \left(4 \omega \sin[2 t \omega] + 2 \omega \sin[2 \alpha - 2 t \omega] - 2 \omega \sin[2 \alpha + 2 t \omega] \right) \right) \Bigg) / \\
& \left(16 \left(M_0^2 \left(6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega] \right) \right. \right. \\
& \quad \left. \left. \sin[\alpha]^2 \sin[t \omega]^2 \right)^{3/2} \right) + \\
& \left(\left(-4 M_0 + 2 M_0 \cos[2 t \omega] - M_0 \cos[2 \alpha - 2 t \omega] - M_0 \cos[2 \alpha + 2 t \omega] + \right. \right. \\
& \quad \left. \left. 2 M_0 \cos[\alpha - t \omega]^2 \sec[\alpha]^2 + 2 M_0 \cos[2 \alpha] \cos[\alpha - t \omega]^2 \sec[\alpha]^2 + 2 M_0 \sec[\alpha]^2 \right. \right. \\
& \quad \left. \left. \sin[t \omega]^2 + 2 M_0 \cos[2 \alpha] \sec[\alpha]^2 \sin[t \omega]^2 + 2 \sqrt{2} \sqrt{-M_0^2 \left(-6 - 2 \cos[2 \alpha] + \right. \right. \right. \\
& \quad \left. \left. 2 \cos[2 t \omega] - \cos[2 \alpha - 2 t \omega] - \cos[2 \alpha + 2 t \omega] \right) \sin[\alpha]^2 \sin[t \omega]^2 \right) \Bigg)
\end{aligned}$$

$$\begin{aligned}
& \left(4 M \omega \sin[2 t \omega] + 2 M \omega \sin[2 \alpha - 2 t \omega] - 2 M \omega \sin[2 \alpha + 2 t \omega] - \right. \\
& \quad \left(\sqrt{2} \left(2 M^2 \omega \cos[t \omega] \left(6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \right. \right. \right. \\
& \quad \quad \left. \left. \cos[2 \alpha + 2 t \omega] \right) \sin[\alpha]^2 \sin[t \omega] + M^2 \sin[\alpha]^2 \sin[t \omega]^2 \right. \\
& \quad \quad \left. \left. \left(4 \omega \sin[2 t \omega] + 2 \omega \sin[2 \alpha - 2 t \omega] - 2 \omega \sin[2 \alpha + 2 t \omega] \right) \right) \right) \Bigg/ \\
& \quad \left(\sqrt{M^2 \left(6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \right. \right. \\
& \quad \quad \left. \left. \cos[2 \alpha + 2 t \omega] \right) \sin[\alpha]^2 \sin[t \omega]^2} \right) \Bigg) \Bigg/ \\
& \left(16 \left(1 + \cos[2 \alpha] \right) \sqrt{M^2 \left(6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \right. \right. \\
& \quad \left. \left. \cos[2 \alpha + 2 t \omega] \right) \sin[\alpha]^2 \sin[t \omega]^2} \right) \\
& \quad \sqrt{\left(\frac{1}{1 + \cos[2 \alpha]} \left(-2 + 4 M - 2 \cos[2 \alpha] - 2 M \cos[2 t \omega] + M \cos[2 \alpha - 2 t \omega] + \right. \right. \\
& \quad \quad \left. \left. M \cos[2 \alpha + 2 t \omega] - 2 \sqrt{2} \sqrt{M^2 \left(6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \right. \right. \right. \\
& \quad \quad \left. \left. \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega] \right) \sin[\alpha]^2 \sin[t \omega]^2} \right) \right) \Bigg) + \\
& \left(\left(4 M - 2 M \cos[2 t \omega] + M \cos[2 \alpha - 2 t \omega] + M \cos[2 \alpha + 2 t \omega] - 2 M \right. \right. \\
& \quad \cos[\alpha - t \omega]^2 \sec[\alpha]^2 - 2 M \cos[2 \alpha] \cos[\alpha - t \omega]^2 \sec[\alpha]^2 - 2 M \sec[\alpha]^2 \\
& \quad \sin[t \omega]^2 - 2 M \cos[2 \alpha] \sec[\alpha]^2 \sin[t \omega]^2 + 2 \sqrt{2} \sqrt{-M^2 \left(-6 - 2 \cos[2 \alpha] + \right. \\
& \quad \quad \left. 2 \cos[2 t \omega] - \cos[2 \alpha - 2 t \omega] - \cos[2 \alpha + 2 t \omega] \right) \sin[\alpha]^2 \sin[t \omega]^2} \Bigg) \\
& \quad \left(4 M \omega \sin[2 t \omega] + 2 M \omega \sin[2 \alpha - 2 t \omega] - 2 M \omega \sin[2 \alpha + 2 t \omega] + \right. \\
& \quad \left(\sqrt{2} \left(2 M^2 \omega \cos[t \omega] \left(6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \right. \right. \right. \\
& \quad \quad \left. \left. \cos[2 \alpha + 2 t \omega] \right) \sin[\alpha]^2 \sin[t \omega] + M^2 \sin[\alpha]^2 \sin[t \omega]^2 \right. \\
& \quad \quad \left. \left. \left(4 \omega \sin[2 t \omega] + 2 \omega \sin[2 \alpha - 2 t \omega] - 2 \omega \sin[2 \alpha + 2 t \omega] \right) \right) \right) \Bigg/ \\
& \quad \left(\sqrt{M^2 \left(6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \right. \right. \\
& \quad \quad \left. \left. \cos[2 \alpha + 2 t \omega] \right) \sin[\alpha]^2 \sin[t \omega]^2} \right) \Bigg) \Bigg/ \\
& \left(16 \left(1 + \cos[2 \alpha] \right) \sqrt{M^2 \left(6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \right. \right. \\
& \quad \left. \left. \cos[2 \alpha + 2 t \omega] \right) \sin[\alpha]^2 \sin[t \omega]^2} \right) \\
& \quad \sqrt{\left(\frac{1}{1 + \cos[2 \alpha]} \left(-2 + 4 M - 2 \cos[2 \alpha] - 2 M \cos[2 t \omega] + M \cos[2 \alpha - 2 t \omega] + \right. \right. \\
& \quad \quad \left. \left. M \cos[2 \alpha + 2 t \omega] + 2 \sqrt{2} \sqrt{M^2 \left(6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \right. \right. \right. \\
& \quad \quad \left. \left. \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega] \right) \sin[\alpha]^2 \sin[t \omega]^2} \right) \right) \Bigg) \Bigg) + \\
& \left(\sqrt{\left(\frac{1}{1 + \cos[2 \alpha]} \left(-2 + 4 M - 2 \cos[2 \alpha] - 2 M \cos[2 t \omega] + M \cos[2 \alpha - 2 t \omega] + \right. \right. \right. \\
& \quad \quad \left. \left. M \cos[2 \alpha + 2 t \omega] + 2 \sqrt{2} \sqrt{M^2 \left(6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \right. \right. \right. \\
& \quad \quad \left. \left. \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega] \right) \sin[\alpha]^2 \sin[t \omega]^2} \right) \right) \Bigg) \Bigg) \\
& \quad \left(-4 M \omega \cos[t \omega] \sec[\alpha]^2 \sin[t \omega] - 4 M \omega \cos[2 \alpha] \cos[t \omega] \sec[\alpha]^2 \right. \\
& \quad \sin[t \omega] + 4 M \omega \sin[2 t \omega] + 2 M \omega \sin[2 \alpha - 2 t \omega] - \\
& \quad 4 M \omega \cos[\alpha - t \omega] \sec[\alpha]^2 \sin[\alpha - t \omega] - 4 M \omega \cos[2 \alpha] \\
& \quad \cos[\alpha - t \omega] \sec[\alpha]^2 \sin[\alpha - t \omega] - 2 M \omega \sin[2 \alpha + 2 t \omega] +
\end{aligned}$$

$$\begin{aligned}
& \left(\sqrt{2} \left(-2 M \theta^2 \omega \cos[t \omega] \left(-6 - 2 \cos[2 \alpha] + 2 \cos[2 t \omega] - \cos[2 \alpha - 2 t \omega] - \right. \right. \right. \\
& \quad \left. \left. \cos[2 \alpha + 2 t \omega] \right) \sin[\alpha]^2 \sin[t \omega] - M \theta^2 \sin[\alpha]^2 \sin[t \omega]^2 \right. \\
& \quad \left. \left. \left(-4 \omega \sin[2 t \omega] - 2 \omega \sin[2 \alpha - 2 t \omega] + 2 \omega \sin[2 \alpha + 2 t \omega] \right) \right) \right) / \\
& \left(\sqrt{\left(-M \theta^2 \left(-6 - 2 \cos[2 \alpha] + 2 \cos[2 t \omega] - \cos[2 \alpha - 2 t \omega] - \right. \right. \right. \\
& \quad \left. \left. \cos[2 \alpha + 2 t \omega] \right) \sin[\alpha]^2 \sin[t \omega]^2 \right) \right) \Bigg) / \\
& \left(8 \sqrt{\left(M \theta^2 \left(6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega] \right) \right. \right. \\
& \quad \left. \left. \sin[\alpha]^2 \sin[t \omega]^2 \right) \right) + \\
& \left(\sqrt{\left(\frac{1}{1 + \cos[2 \alpha]} \left(-2 + 4 M \theta - 2 \cos[2 \alpha] - 2 M \theta \cos[2 t \omega] + M \theta \cos[2 \alpha - 2 t \omega] + \right. \right. \right. \\
& \quad \left. \left. M \theta \cos[2 \alpha + 2 t \omega] - 2 \sqrt{2} \sqrt{\left(M \theta^2 \left(6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \right. \right. \right. \right. \\
& \quad \left. \left. \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega] \right) \sin[\alpha]^2 \sin[t \omega]^2 \right) \right) \right) \Bigg) \\
& \left(4 M \theta \omega \cos[t \omega] \sec[\alpha]^2 \sin[t \omega] + 4 M \theta \omega \cos[2 \alpha] \cos[t \omega] \sec[\alpha]^2 \right. \\
& \quad \sin[t \omega] - 4 M \theta \omega \sin[2 t \omega] - 2 M \theta \omega \sin[2 \alpha - 2 t \omega] + \\
& \quad 4 M \theta \omega \cos[\alpha - t \omega] \sec[\alpha]^2 \sin[\alpha - t \omega] + 4 M \theta \omega \cos[2 \alpha] \\
& \quad \cos[\alpha - t \omega] \sec[\alpha]^2 \sin[\alpha - t \omega] + 2 M \theta \omega \sin[2 \alpha + 2 t \omega] + \\
& \quad \left(\sqrt{2} \left(-2 M \theta^2 \omega \cos[t \omega] \left(-6 - 2 \cos[2 \alpha] + 2 \cos[2 t \omega] - \cos[2 \alpha - 2 t \omega] - \right. \right. \right. \\
& \quad \left. \left. \cos[2 \alpha + 2 t \omega] \right) \sin[\alpha]^2 \sin[t \omega] - M \theta^2 \sin[\alpha]^2 \sin[t \omega]^2 \right. \\
& \quad \left. \left. \left(-4 \omega \sin[2 t \omega] - 2 \omega \sin[2 \alpha - 2 t \omega] + 2 \omega \sin[2 \alpha + 2 t \omega] \right) \right) \right) / \\
& \quad \left(\sqrt{\left(-M \theta^2 \left(-6 - 2 \cos[2 \alpha] + 2 \cos[2 t \omega] - \cos[2 \alpha - 2 t \omega] - \right. \right. \right. \\
& \quad \left. \left. \cos[2 \alpha + 2 t \omega] \right) \sin[\alpha]^2 \sin[t \omega]^2 \right) \right) \Bigg) \Bigg) / \\
& \left(8 \sqrt{\left(M \theta^2 \left(6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega] \right) \right. \right. \\
& \quad \left. \left. \sin[\alpha]^2 \sin[t \omega]^2 \right) \right) \Bigg) + \\
& \left(\left(\sqrt{\left(\frac{1}{1 + \cos[2 \alpha]} \left(-2 + 4 M \theta - 2 \cos[2 \alpha] - 2 M \theta \cos[2 t \omega] + M \theta \cos[2 \alpha - 2 t \omega] + \right. \right. \right. \right. \\
& \quad \left. \left. M \theta \cos[2 \alpha + 2 t \omega] - 2 \sqrt{2} \sqrt{\left(M \theta^2 \left(6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \right. \right. \right. \right. \\
& \quad \left. \left. \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega] \right) \sin[\alpha]^2 \sin[t \omega]^2 \right) \right) \right) \Bigg) \\
& \left(4 M \theta - 2 M \theta \cos[2 t \omega] + M \theta \cos[2 \alpha - 2 t \omega] + M \theta \cos[2 \alpha + 2 t \omega] - \right. \\
& \quad 2 M \theta \cos[\alpha - t \omega]^2 \sec[\alpha]^2 - 2 M \theta \cos[2 \alpha] \cos[\alpha - t \omega]^2 \sec[\alpha]^2 - 2 M \theta \sec[\alpha]^2 \\
& \quad \sin[t \omega]^2 - 2 M \theta \cos[2 \alpha] \sec[\alpha]^2 \sin[t \omega]^2 + 2 \sqrt{2} \sqrt{\left(M \theta^2 \left(6 + 2 \cos[2 \alpha] - \right. \right. \\
& \quad \left. \left. 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega] \right) \sin[\alpha]^2 \sin[t \omega]^2 \right) \right) \Bigg) \Bigg) / \\
& \left(8 \sqrt{\left(M \theta^2 \left(6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega] \right) \right. \right. \\
& \quad \left. \left. \sin[\alpha]^2 \sin[t \omega]^2 \right) \right) + \\
& \left(\sqrt{\left(\frac{1}{1 + \cos[2 \alpha]} \left(-2 + 4 M \theta - 2 \cos[2 \alpha] - 2 M \theta \cos[2 t \omega] + M \theta \cos[2 \alpha - 2 t \omega] + \right. \right. \right. \\
& \quad \left. \left. M \theta \cos[2 \alpha + 2 t \omega] + 2 \sqrt{2} \sqrt{\left(M \theta^2 \left(6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \right. \right. \right. \right. \\
& \quad \left. \left. \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega] \right) \sin[\alpha]^2 \sin[t \omega]^2 \right) \right) \Bigg) \Bigg)
\end{aligned}$$

$$\begin{aligned}
& \left(-4 M0 + 2 M0 \cos[2 t \omega] - M0 \cos[2 \alpha - 2 t \omega] - M0 \cos[2 \alpha + 2 t \omega] + \right. \\
& \quad 2 M0 \cos[\alpha - t \omega]^2 \sec[\alpha]^2 + 2 M0 \cos[2 \alpha] \cos[\alpha - t \omega]^2 \sec[\alpha]^2 + 2 M0 \sec[\alpha]^2 \\
& \quad \sin[t \omega]^2 + 2 M0 \cos[2 \alpha] \sec[\alpha]^2 \sin[t \omega]^2 + 2 \sqrt{2} \sqrt{M0^2 (6 + 2 \cos[2 \alpha] - \\
& \quad 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega]^2} \left. \right) \Bigg/ \\
& \left(8 \sqrt{M0^2 (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega]^2} \right) \\
& \left(- \left(i \omega \cos[\alpha] \cot[\alpha] \cot[t \omega] \csc[t \omega]^2 \left(-4 M0 + 2 M0 \cos[2 t \omega] - \right. \right. \right. \\
& \quad M0 \cos[2 \alpha - 2 t \omega] - M0 \cos[2 \alpha + 2 t \omega] + 2 M0 \cos[\alpha - t \omega]^2 \sec[\alpha]^2 + \\
& \quad 2 M0 \cos[2 \alpha] \cos[\alpha - t \omega]^2 \sec[\alpha]^2 + 2 M0 \sec[\alpha]^2 \sin[t \omega]^2 + \\
& \quad 2 M0 \cos[2 \alpha] \sec[\alpha]^2 \sin[t \omega]^2 + 2 \sqrt{2} \sqrt{-M0^2 (-6 - 2 \cos[2 \alpha] + \\
& \quad 2 \cos[2 t \omega] - \cos[2 \alpha - 2 t \omega] - \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega]^2} \left. \right) \right) \\
& \sqrt{\left(\frac{1}{1 + \cos[2 \alpha]} \left(-2 + 4 M0 - 2 \cos[2 \alpha] - 2 M0 \cos[2 t \omega] + M0 \cos[2 \alpha - 2 t \omega] + \right. \right. \\
& \quad M0 \cos[2 \alpha + 2 t \omega] - 2 \sqrt{2} \sqrt{M0^2 (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \\
& \quad \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega]^2} \left. \right) \Bigg/ \\
& \left(4 M0 - 2 M0 \cos[2 t \omega] + M0 \cos[2 \alpha - 2 t \omega] + M0 \cos[2 \alpha + 2 t \omega] - \right. \\
& \quad 2 M0 \cos[\alpha - t \omega]^2 \sec[\alpha]^2 - 2 M0 \cos[2 \alpha] \cos[\alpha - t \omega]^2 \sec[\alpha]^2 - \\
& \quad 2 M0 \sec[\alpha]^2 \sin[t \omega]^2 - 2 M0 \cos[2 \alpha] \sec[\alpha]^2 \sin[t \omega]^2 + \\
& \quad 2 \sqrt{2} \sqrt{M0^2 (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega]^2} \left. \right) \Bigg/ \\
& \left(16 M0 (1 + \cos[2 \alpha]) \sqrt{M0^2 (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega]^2} \right) \Bigg) + \\
& \left(i \omega \cos[\alpha] \cot[\alpha] \cot[t \omega] \csc[t \omega]^2 \left(4 M0 - 2 M0 \cos[2 t \omega] + \right. \right. \\
& \quad M0 \cos[2 \alpha - 2 t \omega] + M0 \cos[2 \alpha + 2 t \omega] - 2 M0 \cos[\alpha - t \omega]^2 \sec[\alpha]^2 - \\
& \quad 2 M0 \cos[2 \alpha] \cos[\alpha - t \omega]^2 \sec[\alpha]^2 - 2 M0 \sec[\alpha]^2 \sin[t \omega]^2 - \\
& \quad 2 M0 \cos[2 \alpha] \sec[\alpha]^2 \sin[t \omega]^2 + 2 \sqrt{2} \sqrt{-M0^2 (-6 - 2 \cos[2 \alpha] + \\
& \quad 2 \cos[2 t \omega] - \cos[2 \alpha - 2 t \omega] - \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega]^2} \left. \right) \Bigg/ \\
& \sqrt{\left(\frac{1}{1 + \cos[2 \alpha]} \left(-2 + 4 M0 - 2 \cos[2 \alpha] - 2 M0 \cos[2 t \omega] + M0 \cos[2 \alpha - 2 t \omega] + \right. \right. \\
& \quad M0 \cos[2 \alpha + 2 t \omega] + 2 \sqrt{2} \sqrt{M0^2 (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \\
& \quad \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega]^2} \left. \right) \Bigg/ \\
& \left(-4 M0 + 2 M0 \cos[2 t \omega] - M0 \cos[2 \alpha - 2 t \omega] - M0 \cos[2 \alpha + 2 t \omega] + \right. \\
& \quad 2 M0 \cos[\alpha - t \omega]^2 \sec[\alpha]^2 + 2 M0 \cos[2 \alpha] \cos[\alpha - t \omega]^2 \sec[\alpha]^2 + \\
& \quad 2 M0 \sec[\alpha]^2 \sin[t \omega]^2 + 2 M0 \cos[2 \alpha] \sec[\alpha]^2 \sin[t \omega]^2 + \\
& \quad 2 \sqrt{2} \sqrt{M0^2 (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega]^2} \left. \right) \Bigg/ \\
& \left(16 M0 (1 + \cos[2 \alpha]) \sqrt{M0^2 (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega]^2} \right) \Bigg) +
\end{aligned}$$

$$\begin{aligned}
& \left. \cos[2\alpha + 2t\omega] \sin[\alpha]^2 \sin[t\omega]^2 \right) \Bigg) \Bigg/ \\
& \left(16 M_0 (1 + \cos[2\alpha]) \sqrt{M_0^2 (6 + 2 \cos[2\alpha] - 2 \cos[2t\omega] + \cos[2\alpha - 2t\omega] + \right. \\
& \quad \left. \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2} \right) - \\
& \left(i \cos[\alpha] \cot[\alpha] \csc[t\omega]^2 (-4 M_0 + 2 M_0 \cos[2t\omega] - M_0 \cos[2\alpha - 2t\omega] - \right. \\
& \quad M_0 \cos[2\alpha + 2t\omega] + 2 M_0 \cos[\alpha - t\omega]^2 \sec[\alpha]^2 + \\
& \quad 2 M_0 \cos[2\alpha] \cos[\alpha - t\omega]^2 \sec[\alpha]^2 + 2 M_0 \sec[\alpha]^2 \sin[t\omega]^2 + \\
& \quad 2 M_0 \cos[2\alpha] \sec[\alpha]^2 \sin[t\omega]^2 + 2 \sqrt{2} \sqrt{-M_0^2 (-6 - 2 \cos[2\alpha] + \\
& \quad 2 \cos[2t\omega] - \cos[2\alpha - 2t\omega] - \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2} \Bigg) \\
& \sqrt{\left(\frac{1}{1 + \cos[2\alpha]} (-2 + 4 M_0 - 2 \cos[2\alpha] - 2 M_0 \cos[2t\omega] + M_0 \cos[2\alpha - 2t\omega] + \right. \\
& \quad M_0 \cos[2\alpha + 2t\omega] - 2 \sqrt{2} \sqrt{M_0^2 (6 + 2 \cos[2\alpha] - 2 \cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2} \Bigg) \\
& \quad \left(4 M_0 - 2 M_0 \cos[2t\omega] + M_0 \cos[2\alpha - 2t\omega] + M_0 \cos[2\alpha + 2t\omega] - \right. \\
& \quad 2 M_0 \cos[\alpha - t\omega]^2 \sec[\alpha]^2 - 2 M_0 \cos[2\alpha] \cos[\alpha - t\omega]^2 \sec[\alpha]^2 - \\
& \quad 2 M_0 \sec[\alpha]^2 \sin[t\omega]^2 - 2 M_0 \cos[2\alpha] \sec[\alpha]^2 \sin[t\omega]^2 + \\
& \quad 2 \sqrt{2} \sqrt{M_0^2 (6 + 2 \cos[2\alpha] - 2 \cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2} \Bigg) \\
& \quad \left(2 M_0^2 \omega \cos[t\omega] (6 + 2 \cos[2\alpha] - 2 \cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega] + M_0^2 \sin[\alpha]^2 \right. \\
& \quad \left. \sin[t\omega]^2 (4 \omega \sin[2t\omega] + 2 \omega \sin[2\alpha - 2t\omega] - 2 \omega \sin[2\alpha + 2t\omega]) \right) \Bigg) \Bigg/ \\
& \left(64 M_0 (1 + \cos[2\alpha]) (M_0^2 (6 + 2 \cos[2\alpha] - 2 \cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2)^{3/2} \right) + \\
& \left(i \cos[\alpha] \cot[\alpha] \csc[t\omega]^2 (4 M_0 - 2 M_0 \cos[2t\omega] + M_0 \cos[2\alpha - 2t\omega] + \right. \\
& \quad M_0 \cos[2\alpha + 2t\omega] - 2 M_0 \cos[\alpha - t\omega]^2 \sec[\alpha]^2 - \\
& \quad 2 M_0 \cos[2\alpha] \cos[\alpha - t\omega]^2 \sec[\alpha]^2 - 2 M_0 \sec[\alpha]^2 \sin[t\omega]^2 - \\
& \quad 2 M_0 \cos[2\alpha] \sec[\alpha]^2 \sin[t\omega]^2 + 2 \sqrt{2} \sqrt{-M_0^2 (-6 - 2 \cos[2\alpha] + \\
& \quad 2 \cos[2t\omega] - \cos[2\alpha - 2t\omega] - \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2} \Bigg) \\
& \sqrt{\left(\frac{1}{1 + \cos[2\alpha]} (-2 + 4 M_0 - 2 \cos[2\alpha] - 2 M_0 \cos[2t\omega] + M_0 \cos[2\alpha - 2t\omega] + \right. \\
& \quad M_0 \cos[2\alpha + 2t\omega] + 2 \sqrt{2} \sqrt{M_0^2 (6 + 2 \cos[2\alpha] - 2 \cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2} \Bigg) \\
& \quad \left(-4 M_0 + 2 M_0 \cos[2t\omega] - M_0 \cos[2\alpha - 2t\omega] - M_0 \cos[2\alpha + 2t\omega] + \right. \\
& \quad 2 M_0 \cos[\alpha - t\omega]^2 \sec[\alpha]^2 + 2 M_0 \cos[2\alpha] \cos[\alpha - t\omega]^2 \sec[\alpha]^2 + \\
& \quad 2 M_0 \sec[\alpha]^2 \sin[t\omega]^2 + 2 M_0 \cos[2\alpha] \sec[\alpha]^2 \sin[t\omega]^2 + \\
& \quad 2 \sqrt{2} \sqrt{M_0^2 (6 + 2 \cos[2\alpha] - 2 \cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2} \Bigg) \\
& \quad \left(2 M_0^2 \omega \cos[t\omega] (6 + 2 \cos[2\alpha] - 2 \cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega] + M_0^2 \sin[\alpha]^2 \right. \\
& \quad \left. \sin[t\omega]^2 (4 \omega \sin[2t\omega] + 2 \omega \sin[2\alpha - 2t\omega] - 2 \omega \sin[2\alpha + 2t\omega]) \right) \Bigg) \Bigg/
\end{aligned}$$

$$\begin{aligned}
& \left. \sin[t\omega]^2 \left(4\omega \sin[2t\omega] + 2\omega \sin[2\alpha - 2t\omega] - 2\omega \sin[2\alpha + 2t\omega] \right) \right) \Bigg/ \\
& \left(64M\theta \left(1 + \cos[2\alpha] \right) \left(M\theta^2 \left(6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \right. \right. \right. \\
& \quad \left. \left. \left. \cos[2\alpha + 2t\omega] \right) \sin[\alpha]^2 \sin[t\omega]^2 \right)^{3/2} \right) + \\
& \left(i \cos[\alpha] \cot[\alpha] \csc[t\omega]^2 \left(-4M\theta + 2M\theta \cos[2t\omega] - M\theta \cos[2\alpha - 2t\omega] - \right. \right. \\
& \quad M\theta \cos[2\alpha + 2t\omega] + 2M\theta \cos[\alpha - t\omega]^2 \sec[\alpha]^2 + \\
& \quad 2M\theta \cos[2\alpha] \cos[\alpha - t\omega]^2 \sec[\alpha]^2 + 2M\theta \sec[\alpha]^2 \sin[t\omega]^2 + \\
& \quad 2M\theta \cos[2\alpha] \sec[\alpha]^2 \sin[t\omega]^2 + 2\sqrt{2} \sqrt{-M\theta^2 (-6 - 2\cos[2\alpha] + \\
& \quad 2\cos[2t\omega] - \cos[2\alpha - 2t\omega] - \cos[2\alpha + 2t\omega])} \sin[\alpha]^2 \sin[t\omega]^2 \right) \Bigg) \\
& \left(4M\theta - 2M\theta \cos[2t\omega] + M\theta \cos[2\alpha - 2t\omega] + M\theta \cos[2\alpha + 2t\omega] - \right. \\
& \quad 2M\theta \cos[\alpha - t\omega]^2 \sec[\alpha]^2 - 2M\theta \cos[2\alpha] \cos[\alpha - t\omega]^2 \sec[\alpha]^2 - 2M\theta \sec[\alpha]^2 \\
& \quad \sin[t\omega]^2 - 2M\theta \cos[2\alpha] \sec[\alpha]^2 \sin[t\omega]^2 + 2\sqrt{2} \sqrt{M\theta^2 (6 + 2\cos[2\alpha] - \\
& \quad 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega])} \sin[\alpha]^2 \sin[t\omega]^2 \Bigg) \\
& \left(4M\theta \omega \sin[2t\omega] + 2M\theta \omega \sin[2\alpha - 2t\omega] - 2M\theta \omega \sin[2\alpha + 2t\omega] - \right. \\
& \quad \left(\sqrt{2} \left(2M\theta^2 \omega \cos[t\omega] \left(6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \right. \right. \right. \\
& \quad \left. \left. \left. \cos[2\alpha + 2t\omega] \right) \sin[\alpha]^2 \sin[t\omega] + M\theta^2 \sin[\alpha]^2 \sin[t\omega]^2 \right. \right. \\
& \quad \left. \left. \left(4\omega \sin[2t\omega] + 2\omega \sin[2\alpha - 2t\omega] - 2\omega \sin[2\alpha + 2t\omega] \right) \right) \right) \Bigg) \Bigg/ \\
& \left(\sqrt{M\theta^2 (6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \right. \\
& \quad \left. \cos[2\alpha + 2t\omega])} \sin[\alpha]^2 \sin[t\omega]^2 \right) \Bigg) \Bigg/ \\
& \left(64M\theta \left(1 + \cos[2\alpha] \right)^2 \sqrt{M\theta^2 (6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \right. \\
& \quad \left. \cos[2\alpha + 2t\omega])} \sin[\alpha]^2 \sin[t\omega]^2 \right) \\
& \sqrt{\left(\frac{1}{1 + \cos[2\alpha]} \left(-2 + 4M\theta - 2\cos[2\alpha] - 2M\theta \cos[2t\omega] + M\theta \cos[2\alpha - 2t\omega] + \right. \right. \\
& \quad M\theta \cos[2\alpha + 2t\omega] - 2\sqrt{2} \sqrt{M\theta^2 (6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \\
& \quad \cos[2\alpha + 2t\omega])} \sin[\alpha]^2 \sin[t\omega]^2 \Bigg) \Bigg) - \\
& \left(i \cos[\alpha] \cot[\alpha] \csc[t\omega]^2 \left(4M\theta - 2M\theta \cos[2t\omega] + M\theta \cos[2\alpha - 2t\omega] + \right. \right. \\
& \quad M\theta \cos[2\alpha + 2t\omega] - 2M\theta \cos[\alpha - t\omega]^2 \sec[\alpha]^2 - \\
& \quad 2M\theta \cos[2\alpha] \cos[\alpha - t\omega]^2 \sec[\alpha]^2 - 2M\theta \sec[\alpha]^2 \sin[t\omega]^2 - \\
& \quad 2M\theta \cos[2\alpha] \sec[\alpha]^2 \sin[t\omega]^2 + 2\sqrt{2} \sqrt{-M\theta^2 (-6 - 2\cos[2\alpha] + \\
& \quad 2\cos[2t\omega] - \cos[2\alpha - 2t\omega] - \cos[2\alpha + 2t\omega])} \sin[\alpha]^2 \sin[t\omega]^2 \Bigg) \Bigg) \\
& \left(-4M\theta + 2M\theta \cos[2t\omega] - M\theta \cos[2\alpha - 2t\omega] - M\theta \cos[2\alpha + 2t\omega] + \right. \\
& \quad 2M\theta \cos[\alpha - t\omega]^2 \sec[\alpha]^2 + 2M\theta \cos[2\alpha] \cos[\alpha - t\omega]^2 \sec[\alpha]^2 + \\
& \quad 2M\theta \sec[\alpha]^2 \sin[t\omega]^2 + 2M\theta \cos[2\alpha] \sec[\alpha]^2 \sin[t\omega]^2 + \\
& \quad 2\sqrt{2} \sqrt{M\theta^2 (6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \\
& \quad \cos[2\alpha + 2t\omega])} \sin[\alpha]^2 \sin[t\omega]^2 \Bigg) \Bigg) \\
& \left(4M\theta \omega \sin[2t\omega] + 2M\theta \omega \sin[2\alpha - 2t\omega] - 2M\theta \omega \sin[2\alpha + 2t\omega] + \right. \\
& \quad \left(\sqrt{2} \left(2M\theta^2 \omega \cos[t\omega] \left(6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \right. \right. \right. \\
& \quad \left. \left. \left. \cos[2\alpha + 2t\omega] \right) \sin[\alpha]^2 \sin[t\omega] + M\theta^2 \sin[\alpha]^2 \sin[t\omega]^2 \right. \right. \\
& \quad \left. \left. \left(4\omega \sin[2t\omega] + 2\omega \sin[2\alpha - 2t\omega] - 2\omega \sin[2\alpha + 2t\omega] \right) \right) \right) \Bigg) \Bigg/
\end{aligned}$$

$$\begin{aligned}
& \left(\sqrt{\left(M^2 \left(6 + 2 \cos[2\alpha] - 2 \cos[2t\omega] + \cos[2\alpha - 2t\omega] + \right. \right. \right. \\
& \quad \left. \left. \cos[2\alpha + 2t\omega] \right) \sin[\alpha]^2 \sin[t\omega]^2 \right) \right) \Bigg) \Bigg/ \\
& \left(64 M^2 \left(1 + \cos[2\alpha] \right)^2 \sqrt{\left(M^2 \left(6 + 2 \cos[2\alpha] - 2 \cos[2t\omega] + \cos[2\alpha - 2t\omega] + \right. \right. \right. \\
& \quad \left. \left. \cos[2\alpha + 2t\omega] \right) \sin[\alpha]^2 \sin[t\omega]^2 \right) \right. \\
& \quad \sqrt{\left(\frac{1}{1 + \cos[2\alpha]} \left(-2 + 4 M - 2 \cos[2\alpha] - 2 M \cos[2t\omega] + M \cos[2\alpha - 2t\omega] + \right. \right. \\
& \quad \left. \left. M \cos[2\alpha + 2t\omega] + 2 \sqrt{2} \sqrt{\left(M^2 \left(6 + 2 \cos[2\alpha] - 2 \cos[2t\omega] + \right. \right. \right. \right. \\
& \quad \left. \left. \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega] \right) \sin[\alpha]^2 \sin[t\omega]^2 \right) \right) \Bigg) \Bigg) + \\
& \left(i \cos[\alpha] \cot[\alpha] \csc[t\omega]^2 \left(-4 M + 2 M \cos[2t\omega] - M \cos[2\alpha - 2t\omega] - \right. \right. \\
& \quad M \cos[2\alpha + 2t\omega] + 2 M \cos[\alpha - t\omega]^2 \sec[\alpha]^2 + \\
& \quad 2 M \cos[2\alpha] \cos[\alpha - t\omega]^2 \sec[\alpha]^2 + 2 M \sec[\alpha]^2 \sin[t\omega]^2 + \\
& \quad 2 M \cos[2\alpha] \sec[\alpha]^2 \sin[t\omega]^2 + 2 \sqrt{2} \sqrt{\left(-M^2 \left(-6 - 2 \cos[2\alpha] + \right. \right. \\
& \quad \left. \left. 2 \cos[2t\omega] - \cos[2\alpha - 2t\omega] - \cos[2\alpha + 2t\omega] \right) \sin[\alpha]^2 \sin[t\omega]^2 \right) \Bigg) \Bigg) \\
& \quad \sqrt{\left(\frac{1}{1 + \cos[2\alpha]} \left(-2 + 4 M - 2 \cos[2\alpha] - 2 M \cos[2t\omega] + M \cos[2\alpha - 2t\omega] + \right. \right. \\
& \quad \left. \left. M \cos[2\alpha + 2t\omega] - 2 \sqrt{2} \sqrt{\left(M^2 \left(6 + 2 \cos[2\alpha] - 2 \cos[2t\omega] + \right. \right. \right. \right. \\
& \quad \left. \left. \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega] \right) \sin[\alpha]^2 \sin[t\omega]^2 \right) \Bigg) \Bigg) \\
& \quad \left(-4 M \omega \cos[t\omega] \sec[\alpha]^2 \sin[t\omega] - 4 M \omega \cos[2\alpha] \cos[t\omega] \sec[\alpha]^2 \right. \\
& \quad \left. \sin[t\omega] + 4 M \omega \sin[2t\omega] + 2 M \omega \sin[2\alpha - 2t\omega] - \right. \\
& \quad 4 M \omega \cos[\alpha - t\omega] \sec[\alpha]^2 \sin[\alpha - t\omega] - 4 M \omega \cos[2\alpha] \\
& \quad \cos[\alpha - t\omega] \sec[\alpha]^2 \sin[\alpha - t\omega] - 2 M \omega \sin[2\alpha + 2t\omega] + \\
& \quad \left(\sqrt{2} \left(2 M^2 \omega \cos[t\omega] \left(6 + 2 \cos[2\alpha] - 2 \cos[2t\omega] + \cos[2\alpha - 2t\omega] + \right. \right. \right. \\
& \quad \left. \left. \cos[2\alpha + 2t\omega] \right) \sin[\alpha]^2 \sin[t\omega] + M^2 \sin[\alpha]^2 \sin[t\omega]^2 \right. \\
& \quad \left. \left(4 \omega \sin[2t\omega] + 2 \omega \sin[2\alpha - 2t\omega] - 2 \omega \sin[2\alpha + 2t\omega] \right) \right) \Bigg) \Bigg/ \\
& \quad \left(\sqrt{\left(M^2 \left(6 + 2 \cos[2\alpha] - 2 \cos[2t\omega] + \cos[2\alpha - 2t\omega] + \right. \right. \right. \\
& \quad \left. \left. \cos[2\alpha + 2t\omega] \right) \sin[\alpha]^2 \sin[t\omega]^2 \right) \Bigg) \Bigg) \Bigg/ \\
& \quad \left(32 M^2 \left(1 + \cos[2\alpha] \right) \sqrt{\left(M^2 \left(6 + 2 \cos[2\alpha] - 2 \cos[2t\omega] + \cos[2\alpha - 2t\omega] + \right. \right. \right. \\
& \quad \left. \left. \cos[2\alpha + 2t\omega] \right) \sin[\alpha]^2 \sin[t\omega]^2 \right) \Bigg) - \\
& \left(i \cos[\alpha] \cot[\alpha] \csc[t\omega]^2 \left(4 M - 2 M \cos[2t\omega] + M \cos[2\alpha - 2t\omega] + \right. \right. \\
& \quad M \cos[2\alpha + 2t\omega] - 2 M \cos[\alpha - t\omega]^2 \sec[\alpha]^2 - \\
& \quad 2 M \cos[2\alpha] \cos[\alpha - t\omega]^2 \sec[\alpha]^2 - 2 M \sec[\alpha]^2 \sin[t\omega]^2 - \\
& \quad 2 M \cos[2\alpha] \sec[\alpha]^2 \sin[t\omega]^2 + 2 \sqrt{2} \sqrt{\left(-M^2 \left(-6 - 2 \cos[2\alpha] + \right. \right. \\
& \quad \left. \left. 2 \cos[2t\omega] - \cos[2\alpha - 2t\omega] - \cos[2\alpha + 2t\omega] \right) \sin[\alpha]^2 \sin[t\omega]^2 \right) \Bigg) \Bigg) \\
& \quad \sqrt{\left(\frac{1}{1 + \cos[2\alpha]} \left(-2 + 4 M - 2 \cos[2\alpha] - 2 M \cos[2t\omega] + M \cos[2\alpha - 2t\omega] + \right. \right. \\
& \quad \left. \left. M \cos[2\alpha + 2t\omega] + 2 \sqrt{2} \sqrt{\left(M^2 \left(6 + 2 \cos[2\alpha] - 2 \cos[2t\omega] + \right. \right. \right. \right.
\end{aligned}$$

$$\begin{aligned}
& \left. \left(\cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega] \right) \sin[\alpha]^2 \sin[t\omega]^2 \right) \Bigg) \\
& \left(4M\omega \cos[t\omega] \sec[\alpha]^2 \sin[t\omega] + 4M\omega \cos[2\alpha] \cos[t\omega] \sec[\alpha]^2 \right. \\
& \quad \sin[t\omega] - 4M\omega \sin[2t\omega] - 2M\omega \sin[2\alpha - 2t\omega] + \\
& \quad 4M\omega \cos[\alpha - t\omega] \sec[\alpha]^2 \sin[\alpha - t\omega] + 4M\omega \cos[2\alpha] \\
& \quad \cos[\alpha - t\omega] \sec[\alpha]^2 \sin[\alpha - t\omega] + 2M\omega \sin[2\alpha + 2t\omega] + \\
& \quad \left(\sqrt{2} \left(2M^2\omega \cos[t\omega] \left(6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \right. \right. \right. \\
& \quad \left. \left. \cos[2\alpha + 2t\omega] \right) \sin[\alpha]^2 \sin[t\omega] + M^2\sin[\alpha]^2 \sin[t\omega]^2 \right. \\
& \quad \left. \left. \left(4\omega \sin[2t\omega] + 2\omega \sin[2\alpha - 2t\omega] - 2\omega \sin[2\alpha + 2t\omega] \right) \right) \right) \Bigg) / \\
& \left(\sqrt{M^2 \left(6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \right. \right. \\
& \quad \left. \left. \cos[2\alpha + 2t\omega] \right) \sin[\alpha]^2 \sin[t\omega]^2} \right) \Bigg) / \\
& \left(32M\omega \left(1 + \cos[2\alpha] \right) \sqrt{M^2 \left(6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \right. \right. \\
& \quad \left. \left. \cos[2\alpha + 2t\omega] \right) \sin[\alpha]^2 \sin[t\omega]^2} \right) - \\
& \left(\frac{1}{2} \cos[\alpha] \cot[\alpha] \csc[t\omega]^2 \sqrt{\left(\frac{1}{1 + \cos[2\alpha]} \left(-2 + 4M\omega - 2\cos[2\alpha] - \right. \right. \right. \\
& \quad \left. \left. 2M\omega \cos[2t\omega] + M\omega \cos[2\alpha - 2t\omega] + M\omega \cos[2\alpha + 2t\omega] + \right. \right. \\
& \quad \left. \left. 2\sqrt{2} \sqrt{M^2 \left(6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \right. \right. \right. \\
& \quad \left. \left. \cos[2\alpha + 2t\omega] \right) \sin[\alpha]^2 \sin[t\omega]^2} \right) \right) \Bigg) \\
& \left(-4M\omega + 2M\omega \cos[2t\omega] - M\omega \cos[2\alpha - 2t\omega] - M\omega \cos[2\alpha + 2t\omega] + \right. \\
& \quad 2M\omega \cos[\alpha - t\omega]^2 \sec[\alpha]^2 + 2M\omega \cos[2\alpha] \cos[\alpha - t\omega]^2 \sec[\alpha]^2 + \\
& \quad 2M\omega \sec[\alpha]^2 \sin[t\omega]^2 + 2M\omega \cos[2\alpha] \sec[\alpha]^2 \sin[t\omega]^2 + \\
& \quad 2\sqrt{2} \sqrt{M^2 \left(6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega] \right) \sin[\alpha]^2 \sin[t\omega]^2} \Bigg) \\
& \quad \left(-4M\omega \cos[t\omega] \sec[\alpha]^2 \sin[t\omega] - \right. \\
& \quad 4M\omega \cos[2\alpha] \cos[t\omega] \sec[\alpha]^2 \sin[t\omega] + 4M\omega \sin[2t\omega] + \\
& \quad 2M\omega \sin[2\alpha - 2t\omega] - 4M\omega \cos[\alpha - t\omega] \sec[\alpha]^2 \sin[\alpha - t\omega] - \\
& \quad 4M\omega \cos[2\alpha] \cos[\alpha - t\omega] \sec[\alpha]^2 \sin[\alpha - t\omega] - 2M\omega \sin[2\alpha + 2t\omega] + \\
& \quad \left(\sqrt{2} \left(-2M^2\omega \cos[t\omega] \left(-6 - 2\cos[2\alpha] + 2\cos[2t\omega] - \cos[2\alpha - 2t\omega] - \right. \right. \right. \\
& \quad \left. \left. \cos[2\alpha + 2t\omega] \right) \sin[\alpha]^2 \sin[t\omega] - M^2\sin[\alpha]^2 \sin[t\omega]^2 \right. \\
& \quad \left. \left. \left(-4\omega \sin[2t\omega] - 2\omega \sin[2\alpha - 2t\omega] + 2\omega \sin[2\alpha + 2t\omega] \right) \right) \right) \Bigg) / \\
& \left(\sqrt{\left(-M^2 \left(-6 - 2\cos[2\alpha] + 2\cos[2t\omega] - \cos[2\alpha - 2t\omega] - \right. \right. \right. \\
& \quad \left. \left. \cos[2\alpha + 2t\omega] \right) \sin[\alpha]^2 \sin[t\omega]^2} \right) \Bigg) \Bigg) / \\
& \left(32M\omega \left(1 + \cos[2\alpha] \right) \sqrt{M^2 \left(6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \right. \right. \\
& \quad \left. \left. \cos[2\alpha + 2t\omega] \right) \sin[\alpha]^2 \sin[t\omega]^2} \right) + \\
& \left(\frac{1}{2} \cos[\alpha] \cot[\alpha] \csc[t\omega]^2 \sqrt{\left(\frac{1}{1 + \cos[2\alpha]} \left(-2 + 4M\omega - 2\cos[2\alpha] - \right. \right. \right. \\
& \quad \left. \left. 2M\omega \cos[2t\omega] + M\omega \cos[2\alpha - 2t\omega] + M\omega \cos[2\alpha + 2t\omega] - \right. \right. \\
& \quad \left. \left. 2\sqrt{2} \sqrt{M^2 \left(6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \right. \right. \right. \\
& \quad \left. \left. \cos[2\alpha + 2t\omega] \right) \sin[\alpha]^2 \sin[t\omega]^2} \right) \right) \Bigg) \\
& \left(4M\omega - 2M\omega \cos[2t\omega] + M\omega \cos[2\alpha - 2t\omega] + M\omega \cos[2\alpha + 2t\omega] - \right. \\
& \quad \left. 2M\omega \cos[\alpha - t\omega]^2 \sec[\alpha]^2 - 2M\omega \cos[2\alpha] \cos[\alpha - t\omega]^2 \sec[\alpha]^2 - \right.
\end{aligned}$$

$$\begin{aligned}
& 2 M \theta \sec[\alpha]^2 \sin[t \omega]^2 - 2 M \theta \cos[2 \alpha] \sec[\alpha]^2 \sin[t \omega]^2 + \\
& 2 \sqrt{2} \sqrt{M \theta^2 (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega])} \\
& \sin[\alpha]^2 \sin[t \omega]^2) \left(4 M \theta \omega \cos[t \omega] \sec[\alpha]^2 \sin[t \omega] + \right. \\
& 4 M \theta \omega \cos[2 \alpha] \cos[t \omega] \sec[\alpha]^2 \sin[t \omega] - 4 M \theta \omega \sin[2 t \omega] - \\
& 2 M \theta \omega \sin[2 \alpha - 2 t \omega] + 4 M \theta \omega \cos[\alpha - t \omega] \sec[\alpha]^2 \sin[\alpha - t \omega] + \\
& 4 M \theta \omega \cos[2 \alpha] \cos[\alpha - t \omega] \sec[\alpha]^2 \sin[\alpha - t \omega] + 2 M \theta \omega \sin[2 \alpha + 2 t \omega] + \\
& \left. \left(\sqrt{2} (-2 M \theta^2 \omega \cos[t \omega] (-6 - 2 \cos[2 \alpha] + 2 \cos[2 t \omega] - \cos[2 \alpha - 2 t \omega] - \right. \right. \\
& \left. \left. \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega] - M \theta^2 \sin[\alpha]^2 \sin[t \omega]^2 \right. \right. \\
& \left. \left. (-4 \omega \sin[2 t \omega] - 2 \omega \sin[2 \alpha - 2 t \omega] + 2 \omega \sin[2 \alpha + 2 t \omega]) \right) \right) / \\
& \left(\sqrt{(-M \theta^2 (-6 - 2 \cos[2 \alpha] + 2 \cos[2 t \omega] - \cos[2 \alpha - 2 t \omega] - \right. \right. \\
& \left. \left. \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega]^2) \right) \right) \Bigg) / \\
& \left(32 M \theta (1 + \cos[2 \alpha]) \sqrt{M \theta^2 (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \right. \\
& \left. \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega]^2) \right) \Bigg) \Bigg) \\
& \tan[\alpha] + \frac{1}{M \theta} \sec[\alpha]^2 (\cos[\alpha - t \omega]^2 + \sin[t \omega]^2) \left(e^{i \theta} \right. \\
& \left. r + \right. \\
& \left(\left((-4 M \theta + 2 M \theta \cos[2 t \omega] - M \theta \cos[2 \alpha - 2 t \omega] - M \theta \cos[2 \alpha + 2 t \omega] + \right. \right. \\
& 2 M \theta \cos[\alpha - t \omega]^2 \sec[\alpha]^2 + 2 M \theta \cos[2 \alpha] \cos[\alpha - t \omega]^2 \sec[\alpha]^2 + \\
& 2 M \theta \sec[\alpha]^2 \sin[t \omega]^2 + 2 M \theta \cos[2 \alpha] \sec[\alpha]^2 \sin[t \omega]^2 + \\
& 2 \sqrt{2} \sqrt{(-M \theta^2 (-6 - 2 \cos[2 \alpha] + 2 \cos[2 t \omega] - \cos[2 \alpha - 2 t \omega] - \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega]^2) \Bigg) \\
& \sqrt{\left(\frac{1}{1 + \cos[2 \alpha]} (-2 + 4 M \theta - 2 \cos[2 \alpha] - 2 M \theta \cos[2 t \omega] + M \theta \cos[2 \alpha - 2 t \omega] + \right. \right. \\
& \left. \left. M \theta \cos[2 \alpha + 2 t \omega] - 2 \sqrt{2} \sqrt{M \theta^2 (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \right. \right. \\
& \left. \left. \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega]^2) \right) \right) \Bigg) / \\
& (8 \sqrt{M \theta^2 (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega])} \\
& \sin[\alpha]^2 \sin[t \omega]^2) + \\
& \left((4 M \theta - 2 M \theta \cos[2 t \omega] + M \theta \cos[2 \alpha - 2 t \omega] + M \theta \cos[2 \alpha + 2 t \omega] - \right. \\
& 2 M \theta \cos[\alpha - t \omega]^2 \sec[\alpha]^2 - 2 M \theta \cos[2 \alpha] \cos[\alpha - t \omega]^2 \sec[\alpha]^2 - \\
& 2 M \theta \sec[\alpha]^2 \sin[t \omega]^2 - 2 M \theta \cos[2 \alpha] \sec[\alpha]^2 \sin[t \omega]^2 + \\
& 2 \sqrt{2} \sqrt{(-M \theta^2 (-6 - 2 \cos[2 \alpha] + 2 \cos[2 t \omega] - \cos[2 \alpha - 2 t \omega] - \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega]^2) \Bigg) \\
& \sqrt{\left(\frac{1}{1 + \cos[2 \alpha]} (-2 + 4 M \theta - 2 \cos[2 \alpha] - 2 M \theta \cos[2 t \omega] + M \theta \cos[2 \alpha - 2 t \omega] + \right. \right. \\
& \left. \left. M \theta \cos[2 \alpha + 2 t \omega] + 2 \sqrt{2} \sqrt{M \theta^2 (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \right. \right. \\
& \left. \left. \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega]^2) \right) \right) \Bigg) / \\
& (8 \sqrt{M \theta^2 (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega])}
\end{aligned}$$

$$\begin{aligned}
& \left. \sin[\alpha]^2 \sin[t \omega]^2) \right) \Bigg) \\
& \left(e^{i \theta} r \left(\left(-4 M_0 + 2 M_0 \cos[2 t \omega] - M_0 \cos[2 \alpha - 2 t \omega] - M_0 \cos[2 \alpha + 2 t \omega] + \right. \right. \right. \\
& \quad 2 M_0 \cos[\alpha - t \omega]^2 \sec[\alpha]^2 + 2 M_0 \cos[2 \alpha] \cos[\alpha - t \omega]^2 \sec[\alpha]^2 + \\
& \quad 2 M_0 \sec[\alpha]^2 \sin[t \omega]^2 + 2 M_0 \cos[2 \alpha] \sec[\alpha]^2 \sin[t \omega]^2 + \\
& \quad 2 \sqrt{2} \sqrt{-M_0^2 (-6 - 2 \cos[2 \alpha] + 2 \cos[2 t \omega] - \cos[2 \alpha - 2 t \omega] - \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega]^2} \Bigg) \\
& \quad \sqrt{\left(\frac{1}{1 + \cos[2 \alpha]} \left(-2 + 4 M_0 - 2 \cos[2 \alpha] - 2 M_0 \cos[2 t \omega] + M_0 \cos[2 \alpha - 2 t \omega] + \right. \right.} \\
& \quad \quad M_0 \cos[2 \alpha + 2 t \omega] - 2 \sqrt{2} \sqrt{M_0^2 (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega]^2} \Bigg) \Bigg) \Bigg) / \\
& \quad \left(8 \sqrt{M_0^2 (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega]^2} \right) + \\
& \quad \left(\left(4 M_0 - 2 M_0 \cos[2 t \omega] + M_0 \cos[2 \alpha - 2 t \omega] + M_0 \cos[2 \alpha + 2 t \omega] - \right. \right. \\
& \quad 2 M_0 \cos[\alpha - t \omega]^2 \sec[\alpha]^2 - 2 M_0 \cos[2 \alpha] \cos[\alpha - t \omega]^2 \sec[\alpha]^2 - \\
& \quad 2 M_0 \sec[\alpha]^2 \sin[t \omega]^2 - 2 M_0 \cos[2 \alpha] \sec[\alpha]^2 \sin[t \omega]^2 + \\
& \quad 2 \sqrt{2} \sqrt{-M_0^2 (-6 - 2 \cos[2 \alpha] + 2 \cos[2 t \omega] - \cos[2 \alpha - 2 t \omega] - \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega]^2} \Bigg) \\
& \quad \sqrt{\left(\frac{1}{1 + \cos[2 \alpha]} \left(-2 + 4 M_0 - 2 \cos[2 \alpha] - 2 M_0 \cos[2 t \omega] + M_0 \cos[2 \alpha - 2 t \omega] + \right. \right.} \\
& \quad \quad M_0 \cos[2 \alpha + 2 t \omega] + 2 \sqrt{2} \sqrt{M_0^2 (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega]^2} \Bigg) \Bigg) \Bigg) / \\
& \quad \left(8 \sqrt{M_0^2 (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega]^2} \right) \Bigg) + \\
& \quad s \left(\left(i \cos[\alpha] \cot[\alpha] \csc[t \omega]^2 \left(-4 M_0 + 2 M_0 \cos[2 t \omega] - M_0 \cos[2 \alpha - 2 t \omega] - \right. \right. \right. \\
& \quad M_0 \cos[2 \alpha + 2 t \omega] + 2 M_0 \cos[\alpha - t \omega]^2 \sec[\alpha]^2 + \\
& \quad 2 M_0 \cos[2 \alpha] \cos[\alpha - t \omega]^2 \sec[\alpha]^2 + 2 M_0 \sec[\alpha]^2 \sin[t \omega]^2 + \\
& \quad 2 M_0 \cos[2 \alpha] \sec[\alpha]^2 \sin[t \omega]^2 + 2 \sqrt{2} \sqrt{-M_0^2 (-6 - 2 \cos[2 \alpha] + 2 \cos[2 t \omega] - \cos[2 \alpha - 2 t \omega] - \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega]^2} \Bigg) \\
& \quad \sqrt{\left(\frac{1}{1 + \cos[2 \alpha]} \left(-2 + 4 M_0 - 2 \cos[2 \alpha] - 2 M_0 \cos[2 t \omega] + M_0 \cos[2 \alpha - 2 t \omega] + \right. \right.} \\
& \quad \quad M_0 \cos[2 \alpha + 2 t \omega] - 2 \sqrt{2} \sqrt{M_0^2 (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega]^2} \Bigg) \Bigg) \Bigg) / \\
& \quad \left(4 M_0 - 2 M_0 \cos[2 t \omega] + M_0 \cos[2 \alpha - 2 t \omega] + M_0 \cos[2 \alpha + 2 t \omega] - \right. \\
& \quad 2 M_0 \cos[\alpha - t \omega]^2 \sec[\alpha]^2 - 2 M_0 \cos[2 \alpha] \cos[\alpha - t \omega]^2 \sec[\alpha]^2 - \\
& \quad 2 M_0 \sec[\alpha]^2 \sin[t \omega]^2 - 2 M_0 \cos[2 \alpha] \sec[\alpha]^2 \sin[t \omega]^2 +
\end{aligned}$$

$$\begin{aligned}
& 2 \sqrt{2} \sqrt{\left(M0^2 \left(6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \right. \right. \\
& \quad \left. \left. \cos[2 \alpha + 2 t \omega] \right) \sin[\alpha]^2 \sin[t \omega]^2 \right) \Bigg) \Bigg/} \\
& \left(32 M0 \left(1 + \cos[2 \alpha] \right) \sqrt{\left(M0^2 \left(6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \right. \right. \right. \\
& \quad \left. \left. \cos[2 \alpha + 2 t \omega] \right) \sin[\alpha]^2 \sin[t \omega]^2 \right) \Bigg) - \right. \\
& \left(\frac{1}{2} \cos[\alpha] \cot[\alpha] \csc[t \omega]^2 \left(4 M0 - 2 M0 \cos[2 t \omega] + M0 \cos[2 \alpha - 2 t \omega] + \right. \right. \\
& \quad M0 \cos[2 \alpha + 2 t \omega] - 2 M0 \cos[\alpha - t \omega]^2 \sec[\alpha]^2 - \\
& \quad 2 M0 \cos[2 \alpha] \cos[\alpha - t \omega]^2 \sec[\alpha]^2 - 2 M0 \sec[\alpha]^2 \sin[t \omega]^2 - \\
& \quad 2 M0 \cos[2 \alpha] \sec[\alpha]^2 \sin[t \omega]^2 + 2 \sqrt{2} \sqrt{\left(-M0^2 \left(-6 - 2 \cos[2 \alpha] + \right. \right. \\
& \quad \left. \left. 2 \cos[2 t \omega] - \cos[2 \alpha - 2 t \omega] - \cos[2 \alpha + 2 t \omega] \right) \sin[\alpha]^2 \sin[t \omega]^2 \right) \Bigg) \Bigg) \\
& \sqrt{\left(\frac{1}{1 + \cos[2 \alpha]} \left(-2 + 4 M0 - 2 \cos[2 \alpha] - 2 M0 \cos[2 t \omega] + M0 \cos[2 \alpha - 2 t \omega] + \right. \right. \\
& \quad M0 \cos[2 \alpha + 2 t \omega] + 2 \sqrt{2} \sqrt{\left(M0^2 \left(6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \right. \right. \\
& \quad \left. \left. \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega] \right) \sin[\alpha]^2 \sin[t \omega]^2 \right) \Bigg) \Bigg) \Bigg) \\
& \left(-4 M0 + 2 M0 \cos[2 t \omega] - M0 \cos[2 \alpha - 2 t \omega] - M0 \cos[2 \alpha + 2 t \omega] + \right. \\
& \quad 2 M0 \cos[\alpha - t \omega]^2 \sec[\alpha]^2 + 2 M0 \cos[2 \alpha] \cos[\alpha - t \omega]^2 \sec[\alpha]^2 + \\
& \quad 2 M0 \sec[\alpha]^2 \sin[t \omega]^2 + 2 M0 \cos[2 \alpha] \sec[\alpha]^2 \sin[t \omega]^2 + \\
& \quad 2 \sqrt{2} \sqrt{\left(M0^2 \left(6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \right. \right. \\
& \quad \left. \left. \cos[2 \alpha + 2 t \omega] \right) \sin[\alpha]^2 \sin[t \omega]^2 \right) \Bigg) \Bigg) \Bigg/} \\
& \left(32 M0 \left(1 + \cos[2 \alpha] \right) \sqrt{\left(M0^2 \left(6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \right. \right. \right. \\
& \quad \left. \left. \cos[2 \alpha + 2 t \omega] \right) \sin[\alpha]^2 \sin[t \omega]^2 \right) \Bigg) \Bigg) \Bigg) + \\
& \left(s \left(\left(\left(-4 M0 + 2 M0 \cos[2 t \omega] - M0 \cos[2 \alpha - 2 t \omega] - M0 \cos[2 \alpha + 2 t \omega] + 2 M0 \cos[\alpha - t \omega]^2 \right. \right. \right. \right. \\
& \quad \sec[\alpha]^2 + 2 M0 \cos[2 \alpha] \cos[\alpha - t \omega]^2 \sec[\alpha]^2 + 2 M0 \sec[\alpha]^2 \sin[t \omega]^2 + \\
& \quad 2 M0 \cos[2 \alpha] \sec[\alpha]^2 \sin[t \omega]^2 + 2 \sqrt{2} \sqrt{\left(-M0^2 \left(-6 - 2 \cos[2 \alpha] + \right. \right. \\
& \quad \left. \left. 2 \cos[2 t \omega] - \cos[2 \alpha - 2 t \omega] - \cos[2 \alpha + 2 t \omega] \right) \sin[\alpha]^2 \sin[t \omega]^2 \right) \Bigg) \Bigg) \Bigg) \\
& \sqrt{\left(\frac{1}{1 + \cos[2 \alpha]} \left(-2 + 4 M0 - 2 \cos[2 \alpha] - 2 M0 \cos[2 t \omega] + M0 \cos[2 \alpha - 2 t \omega] + \right. \right. \\
& \quad M0 \cos[2 \alpha + 2 t \omega] - 2 \sqrt{2} \sqrt{\left(M0^2 \left(6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \right. \right. \\
& \quad \left. \left. \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega] \right) \sin[\alpha]^2 \sin[t \omega]^2 \right) \Bigg) \Bigg) \Bigg) \Bigg/} \\
& \left(8 \sqrt{\left(M0^2 \left(6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega] \right) \right. \right. \\
& \quad \left. \left. \sin[\alpha]^2 \sin[t \omega]^2 \right) \Bigg) \Bigg) + \right. \\
& \left(\left(4 M0 - 2 M0 \cos[2 t \omega] + M0 \cos[2 \alpha - 2 t \omega] + M0 \cos[2 \alpha + 2 t \omega] - \right. \right. \\
& \quad 2 M0 \cos[\alpha - t \omega]^2 \sec[\alpha]^2 - 2 M0 \cos[2 \alpha] \cos[\alpha - t \omega]^2 \sec[\alpha]^2 - \\
& \quad 2 M0 \sec[\alpha]^2 \sin[t \omega]^2 - 2 M0 \cos[2 \alpha] \sec[\alpha]^2 \sin[t \omega]^2 + \\
& \quad 2 \sqrt{2} \sqrt{\left(-M0^2 \left(-6 - 2 \cos[2 \alpha] + 2 \cos[2 t \omega] - \right. \right. \\
& \quad \left. \left. \cos[2 \alpha - 2 t \omega] - \cos[2 \alpha + 2 t \omega] \right) \sin[\alpha]^2 \sin[t \omega]^2 \right) \Bigg) \Bigg) \Bigg)
\end{aligned}$$

$$\begin{aligned}
& \sqrt{\left(\frac{1}{1 + \cos[2\alpha]} \left(-2 + 4M\theta - 2\cos[2\alpha] - 2M\theta\cos[2t\omega] + M\theta\cos[2\alpha - 2t\omega] + \right. \right. \\
& \quad \left. \left. M\theta\cos[2\alpha + 2t\omega] + 2\sqrt{2}\sqrt{M\theta^2(6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \right. \right. \\
& \quad \left. \left. \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega])\sin[\alpha]^2\sin[t\omega]^2) \right) \right) \Bigg/} \\
& \left(8\sqrt{M\theta^2(6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega])\sin[\alpha]^2\sin[t\omega]^2} \right) + \\
& e^{-i\theta} r \left(\left(i\cos[\alpha]\cot[\alpha]\csc[t\omega]^2 \left(-4M\theta + 2M\theta\cos[2t\omega] - M\theta\cos[2\alpha - 2t\omega] - \right. \right. \right. \\
& \quad \left. \left. M\theta\cos[2\alpha + 2t\omega] + 2M\theta\cos[\alpha - t\omega]^2\sec[\alpha]^2 + \right. \right. \\
& \quad \left. \left. 2M\theta\cos[2\alpha]\cos[\alpha - t\omega]^2\sec[\alpha]^2 + 2M\theta\sec[\alpha]^2\sin[t\omega]^2 + \right. \right. \\
& \quad \left. \left. 2M\theta\cos[2\alpha]\sec[\alpha]^2\sin[t\omega]^2 + 2\sqrt{2}\sqrt{-M\theta^2(-6 - 2\cos[2\alpha] + \right. \right. \\
& \quad \left. \left. 2\cos[2t\omega] - \cos[2\alpha - 2t\omega] - \cos[2\alpha + 2t\omega])\sin[\alpha]^2\sin[t\omega]^2} \right) \right) \\
& \sqrt{\left(\frac{1}{1 + \cos[2\alpha]} \left(-2 + 4M\theta - 2\cos[2\alpha] - 2M\theta\cos[2t\omega] + M\theta\cos[2\alpha - 2t\omega] + \right. \right. \\
& \quad \left. \left. M\theta\cos[2\alpha + 2t\omega] - 2\sqrt{2}\sqrt{M\theta^2(6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \right. \right. \\
& \quad \left. \left. \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega])\sin[\alpha]^2\sin[t\omega]^2} \right) \right) \Bigg/} \\
& \left(4M\theta - 2M\theta\cos[2t\omega] + M\theta\cos[2\alpha - 2t\omega] + M\theta\cos[2\alpha + 2t\omega] - \right. \\
& \quad \left. 2M\theta\cos[\alpha - t\omega]^2\sec[\alpha]^2 - 2M\theta\cos[2\alpha]\cos[\alpha - t\omega]^2\sec[\alpha]^2 - \right. \\
& \quad \left. 2M\theta\sec[\alpha]^2\sin[t\omega]^2 - 2M\theta\cos[2\alpha]\sec[\alpha]^2\sin[t\omega]^2 + \right. \\
& \quad \left. 2\sqrt{2}\sqrt{M\theta^2(6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \right. \\
& \quad \left. \cos[2\alpha + 2t\omega])\sin[\alpha]^2\sin[t\omega]^2} \right) \Bigg/} \\
& \left(32M\theta(1 + \cos[2\alpha])\sqrt{M\theta^2(6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \right. \\
& \quad \left. \cos[2\alpha + 2t\omega])\sin[\alpha]^2\sin[t\omega]^2} \right) - \\
& \left(i\cos[\alpha]\cot[\alpha]\csc[t\omega]^2 \left(4M\theta - 2M\theta\cos[2t\omega] + M\theta\cos[2\alpha - 2t\omega] + \right. \right. \\
& \quad \left. \left. M\theta\cos[2\alpha + 2t\omega] - 2M\theta\cos[\alpha - t\omega]^2\sec[\alpha]^2 - \right. \right. \\
& \quad \left. \left. 2M\theta\cos[2\alpha]\cos[\alpha - t\omega]^2\sec[\alpha]^2 - 2M\theta\sec[\alpha]^2\sin[t\omega]^2 - \right. \right. \\
& \quad \left. \left. 2M\theta\cos[2\alpha]\sec[\alpha]^2\sin[t\omega]^2 + 2\sqrt{2}\sqrt{-M\theta^2(-6 - 2\cos[2\alpha] + \right. \right. \\
& \quad \left. \left. 2\cos[2t\omega] - \cos[2\alpha - 2t\omega] - \cos[2\alpha + 2t\omega])\sin[\alpha]^2\sin[t\omega]^2} \right) \right) \\
& \sqrt{\left(\frac{1}{1 + \cos[2\alpha]} \left(-2 + 4M\theta - 2\cos[2\alpha] - 2M\theta\cos[2t\omega] + M\theta\cos[2\alpha - 2t\omega] + \right. \right. \\
& \quad \left. \left. M\theta\cos[2\alpha + 2t\omega] + 2\sqrt{2}\sqrt{M\theta^2(6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \right. \right. \\
& \quad \left. \left. \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega])\sin[\alpha]^2\sin[t\omega]^2} \right) \right) \Bigg/} \\
& \left(-4M\theta + 2M\theta\cos[2t\omega] - M\theta\cos[2\alpha - 2t\omega] - M\theta\cos[2\alpha + 2t\omega] + \right. \\
& \quad \left. 2M\theta\cos[\alpha - t\omega]^2\sec[\alpha]^2 + 2M\theta\cos[2\alpha]\cos[\alpha - t\omega]^2\sec[\alpha]^2 + \right. \\
& \quad \left. 2M\theta\sec[\alpha]^2\sin[t\omega]^2 + 2M\theta\cos[2\alpha]\sec[\alpha]^2\sin[t\omega]^2 + \right. \\
& \quad \left. 2\sqrt{2}\sqrt{M\theta^2(6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \right. \\
& \quad \left. \cos[2\alpha + 2t\omega])\sin[\alpha]^2\sin[t\omega]^2} \right) \Bigg/}
\end{aligned}$$

$$\begin{aligned}
& \left(32 M0 (1 + \cos[2\alpha]) \sqrt{M0^2 (6 + 2 \cos[2\alpha] - 2 \cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2} \right) \Big) \\
& \left(- \left(\left(i M0 (1 + \cos[2\alpha]) \sec[\alpha] \sin[t\omega]^2 \sqrt{\left(\frac{1}{1 + \cos[2\alpha]} (-2 + 4 M0 - 2 \cos[2\alpha] - 2 M0 \cos[2t\omega] + M0 \cos[2\alpha - 2t\omega] + M0 \cos[2\alpha + 2t\omega] - 2 \sqrt{2} \sqrt{M0^2 (6 + 2 \cos[2\alpha] - 2 \cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2} \right) \tan[\alpha]} \right) / \right. \right. \\
& \left. \left(2 \sqrt{M0^2 (6 + 2 \cos[2\alpha] - 2 \cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2} \right) \right) + \\
& \left(i M0 (1 + \cos[2\alpha]) \sec[\alpha] \sin[t\omega]^2 \sqrt{\left(\frac{1}{1 + \cos[2\alpha]} (-2 + 4 M0 - 2 \cos[2\alpha] - 2 M0 \cos[2t\omega] + M0 \cos[2\alpha - 2t\omega] + M0 \cos[2\alpha + 2t\omega] + 2 \sqrt{2} \sqrt{M0^2 (6 + 2 \cos[2\alpha] - 2 \cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2} \right) \tan[\alpha]} \right) / \right. \\
& \left. \left(2 \sqrt{M0^2 (6 + 2 \cos[2\alpha] - 2 \cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2} \right) \right) + \\
& i \left(\left(\left((-4 M0 + 2 M0 \cos[2t\omega] - M0 \cos[2\alpha - 2t\omega] - M0 \cos[2\alpha + 2t\omega] + 2 M0 \cos[\alpha - t\omega])^2 \right. \right. \right. \\
& \left. \left. \sec[\alpha]^2 + 2 M0 \cos[2\alpha] \cos[\alpha - t\omega]^2 \sec[\alpha]^2 + 2 M0 \sec[\alpha]^2 \sin[t\omega]^2 + 2 M0 \cos[2\alpha] \sec[\alpha]^2 \sin[t\omega]^2 + 2 \sqrt{2} \sqrt{-M0^2 (-6 - 2 \cos[2\alpha] + 2 \cos[2t\omega] - \cos[2\alpha - 2t\omega] - \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2} \right) \right. \right. \\
& \left. \sqrt{\left(\frac{1}{1 + \cos[2\alpha]} (-2 + 4 M0 - 2 \cos[2\alpha] - 2 M0 \cos[2t\omega] + M0 \cos[2\alpha - 2t\omega] + M0 \cos[2\alpha + 2t\omega] - 2 \sqrt{2} \sqrt{M0^2 (6 + 2 \cos[2\alpha] - 2 \cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2} \right) \right) / \right. \\
& \left. \left(8 \sqrt{M0^2 (6 + 2 \cos[2\alpha] - 2 \cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2} \right) \right) + \\
& \left(\left(4 M0 - 2 M0 \cos[2t\omega] + M0 \cos[2\alpha - 2t\omega] + M0 \cos[2\alpha + 2t\omega] - 2 M0 \cos[\alpha - t\omega]^2 \sec[\alpha]^2 - 2 M0 \cos[2\alpha] \cos[\alpha - t\omega]^2 \sec[\alpha]^2 - 2 M0 \sec[\alpha]^2 \sin[t\omega]^2 - 2 M0 \cos[2\alpha] \sec[\alpha]^2 \sin[t\omega]^2 + 2 \sqrt{2} \sqrt{-M0^2 (-6 - 2 \cos[2\alpha] + 2 \cos[2t\omega] - \cos[2\alpha - 2t\omega] - \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2} \right) \right. \right. \\
& \left. \sqrt{\left(\frac{1}{1 + \cos[2\alpha]} (-2 + 4 M0 - 2 \cos[2\alpha] - 2 M0 \cos[2t\omega] + M0 \cos[2\alpha - 2t\omega] + M0 \cos[2\alpha + 2t\omega] + 2 \sqrt{2} \sqrt{M0^2 (6 + 2 \cos[2\alpha] - 2 \cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2} \right) \right) \right)
\end{aligned}$$

$$\begin{aligned}
& \left. \left(\cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega] \right) \sin[\alpha]^2 \sin[t\omega]^2 \right) \Bigg) \Bigg) / \\
& \left(8 \sqrt{M\theta^2 (6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega])} \right. \\
& \quad \left. \sin[\alpha]^2 \sin[t\omega]^2 \right) \Bigg) \\
& \left(- \left(\left(-4M\theta + 2M\theta \cos[2t\omega] - M\theta \cos[2\alpha - 2t\omega] - M\theta \cos[2\alpha + 2t\omega] + \right. \right. \right. \\
& \quad \left. \left. \left. 2M\theta \cos[\alpha - t\omega]^2 \sec[\alpha]^2 + 2M\theta \cos[2\alpha] \cos[\alpha - t\omega]^2 \sec[\alpha]^2 + 2M\theta \sec[\alpha]^2 \right. \right. \right. \\
& \quad \left. \left. \left. \sin[t\omega]^2 + 2M\theta \cos[2\alpha] \sec[\alpha]^2 \sin[t\omega]^2 + 2\sqrt{2} \sqrt{-M\theta^2 (-6 - 2\cos[2\alpha] + \right. \right. \right. \\
& \quad \left. \left. \left. 2\cos[2t\omega] - \cos[2\alpha - 2t\omega] - \cos[2\alpha + 2t\omega])} \sin[\alpha]^2 \sin[t\omega]^2 \right) \right) \right. \\
& \quad \left. \sqrt{\left(\frac{1}{1 + \cos[2\alpha]} \left(-2 + 4M\theta - 2\cos[2\alpha] - 2M\theta \cos[2t\omega] + M\theta \cos[2\alpha - 2t\omega] + \right. \right. \right.} \right. \\
& \quad \left. \left. \left. M\theta \cos[2\alpha + 2t\omega] - 2\sqrt{2} \sqrt{M\theta^2 (6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \right. \right. \right.} \right. \\
& \quad \left. \left. \left. \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega])} \sin[\alpha]^2 \sin[t\omega]^2 \right) \right) \right. \\
& \quad \left(2M\theta^2 \omega \cos[t\omega] (6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \right. \\
& \quad \left. \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega] + M\theta^2 \sin[\alpha]^2 \sin[t\omega]^2 \right. \\
& \quad \left. \left. (4\omega \sin[2t\omega] + 2\omega \sin[2\alpha - 2t\omega] - 2\omega \sin[2\alpha + 2t\omega]) \right) \right) \Bigg) / \\
& \left(16 (M\theta^2 (6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega]) \right. \\
& \quad \left. \sin[\alpha]^2 \sin[t\omega]^2)^{3/2} \right) \Bigg) - \\
& \left(\left(4M\theta - 2M\theta \cos[2t\omega] + M\theta \cos[2\alpha - 2t\omega] + M\theta \cos[2\alpha + 2t\omega] - \right. \right. \\
& \quad \left. \left. 2M\theta \cos[\alpha - t\omega]^2 \sec[\alpha]^2 - 2M\theta \cos[2\alpha] \cos[\alpha - t\omega]^2 \sec[\alpha]^2 - \right. \right. \\
& \quad \left. \left. 2M\theta \sec[\alpha]^2 \sin[t\omega]^2 - 2M\theta \cos[2\alpha] \sec[\alpha]^2 \sin[t\omega]^2 + \right. \right. \\
& \quad \left. \left. 2\sqrt{2} \sqrt{-M\theta^2 (-6 - 2\cos[2\alpha] + 2\cos[2t\omega] - \right. \right.} \right. \\
& \quad \left. \left. \left. \cos[2\alpha - 2t\omega] - \cos[2\alpha + 2t\omega])} \sin[\alpha]^2 \sin[t\omega]^2 \right) \right) \right. \\
& \quad \left. \sqrt{\left(\frac{1}{1 + \cos[2\alpha]} \left(-2 + 4M\theta - 2\cos[2\alpha] - 2M\theta \cos[2t\omega] + M\theta \cos[2\alpha - 2t\omega] + \right. \right. \right.} \right. \\
& \quad \left. \left. \left. M\theta \cos[2\alpha + 2t\omega] + 2\sqrt{2} \sqrt{M\theta^2 (6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \right. \right. \right.} \right. \\
& \quad \left. \left. \left. \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega])} \sin[\alpha]^2 \sin[t\omega]^2 \right) \right) \right. \\
& \quad \left(2M\theta^2 \omega \cos[t\omega] (6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \right. \\
& \quad \left. \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega] + M\theta^2 \sin[\alpha]^2 \sin[t\omega]^2 \right. \\
& \quad \left. \left. (4\omega \sin[2t\omega] + 2\omega \sin[2\alpha - 2t\omega] - 2\omega \sin[2\alpha + 2t\omega]) \right) \right) \Bigg) / \\
& \left(16 (M\theta^2 (6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega]) \right. \\
& \quad \left. \sin[\alpha]^2 \sin[t\omega]^2)^{3/2} \right) + \\
& \left(\left(-4M\theta + 2M\theta \cos[2t\omega] - M\theta \cos[2\alpha - 2t\omega] - M\theta \cos[2\alpha + 2t\omega] + \right. \right. \\
& \quad \left. \left. 2M\theta \cos[\alpha - t\omega]^2 \sec[\alpha]^2 + 2M\theta \cos[2\alpha] \cos[\alpha - t\omega]^2 \sec[\alpha]^2 + \right. \right. \\
& \quad \left. \left. 2M\theta \sec[\alpha]^2 \sin[t\omega]^2 + 2M\theta \cos[2\alpha] \sec[\alpha]^2 \sin[t\omega]^2 + \right. \right. \\
& \quad \left. \left. 2\sqrt{2} \sqrt{-M\theta^2 (-6 - 2\cos[2\alpha] + 2\cos[2t\omega] - \right. \right.} \right.
\end{aligned}$$

$$\begin{aligned}
& \left(\cos[2\alpha - 2t\omega] - \cos[2\alpha + 2t\omega] \right) \sin[\alpha]^2 \sin[t\omega]^2 \Big) \\
& \left(4M\omega \sin[2t\omega] + 2M\omega \sin[2\alpha - 2t\omega] - 2M\omega \sin[2\alpha + 2t\omega] - \right. \\
& \quad \left(\sqrt{2} \left(2M^2\omega \cos[t\omega] \left(6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \right. \right. \right. \\
& \quad \quad \left. \cos[2\alpha + 2t\omega] \right) \sin[\alpha]^2 \sin[t\omega] + M^2 \sin[\alpha]^2 \sin[t\omega]^2 \\
& \quad \left. \left(4\omega \sin[2t\omega] + 2\omega \sin[2\alpha - 2t\omega] - 2\omega \sin[2\alpha + 2t\omega] \right) \right) \Big) \Big) / \\
& \quad \left(\sqrt{M^2 \left(6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \right. \right. \\
& \quad \quad \left. \cos[2\alpha + 2t\omega] \right) \sin[\alpha]^2 \sin[t\omega]^2} \Big) \Big) \Big) / \\
& \left(16 \left(1 + \cos[2\alpha] \right) \sqrt{M^2 \left(6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \right. \right. \\
& \quad \left. \cos[2\alpha + 2t\omega] \right) \sin[\alpha]^2 \sin[t\omega]^2} \Big) \\
& \quad \sqrt{\left(\frac{1}{1 + \cos[2\alpha]} \left(-2 + 4M - 2\cos[2\alpha] - 2M\cos[2t\omega] + M\cos[2\alpha - 2t\omega] + \right. \right. \\
& \quad \quad \left. M\cos[2\alpha + 2t\omega] - 2\sqrt{2} \sqrt{M^2 \left(6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \right. \right.} \\
& \quad \quad \left. \left. \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega] \right) \sin[\alpha]^2 \sin[t\omega]^2} \right) \Big) \Big) \Big) + \\
& \left(\left(4M - 2M\cos[2t\omega] + M\cos[2\alpha - 2t\omega] + M\cos[2\alpha + 2t\omega] - 2M \right. \right. \\
& \quad \cos[\alpha - t\omega]^2 \sec[\alpha]^2 - 2M\cos[2\alpha] \cos[\alpha - t\omega]^2 \sec[\alpha]^2 - \\
& \quad 2M\sec[\alpha]^2 \sin[t\omega]^2 - 2M\cos[2\alpha] \sec[\alpha]^2 \sin[t\omega]^2 + \\
& \quad 2\sqrt{2} \sqrt{-M^2 \left(-6 - 2\cos[2\alpha] + 2\cos[2t\omega] - \right.} \\
& \quad \quad \left. \cos[2\alpha - 2t\omega] - \cos[2\alpha + 2t\omega] \right) \sin[\alpha]^2 \sin[t\omega]^2} \Big) \\
& \quad \left(4M\omega \sin[2t\omega] + 2M\omega \sin[2\alpha - 2t\omega] - 2M\omega \sin[2\alpha + 2t\omega] + \right. \\
& \quad \left(\sqrt{2} \left(2M^2\omega \cos[t\omega] \left(6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \right. \right. \right. \\
& \quad \quad \left. \cos[2\alpha + 2t\omega] \right) \sin[\alpha]^2 \sin[t\omega] + M^2 \sin[\alpha]^2 \sin[t\omega]^2 \\
& \quad \left. \left(4\omega \sin[2t\omega] + 2\omega \sin[2\alpha - 2t\omega] - 2\omega \sin[2\alpha + 2t\omega] \right) \right) \Big) \Big) / \\
& \quad \left(\sqrt{M^2 \left(6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \right. \right. \\
& \quad \quad \left. \cos[2\alpha + 2t\omega] \right) \sin[\alpha]^2 \sin[t\omega]^2} \Big) \Big) \Big) / \\
& \left(16 \left(1 + \cos[2\alpha] \right) \sqrt{M^2 \left(6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \right. \right. \\
& \quad \left. \cos[2\alpha + 2t\omega] \right) \sin[\alpha]^2 \sin[t\omega]^2} \Big) \\
& \quad \sqrt{\left(\frac{1}{1 + \cos[2\alpha]} \left(-2 + 4M - 2\cos[2\alpha] - 2M\cos[2t\omega] + M\cos[2\alpha - 2t\omega] + \right. \right. \\
& \quad \quad \left. M\cos[2\alpha + 2t\omega] + 2\sqrt{2} \sqrt{M^2 \left(6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \right. \right.} \\
& \quad \quad \left. \left. \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega] \right) \sin[\alpha]^2 \sin[t\omega]^2} \right) \Big) \Big) \Big) + \\
& \quad \sqrt{\left(\frac{1}{1 + \cos[2\alpha]} \left(-2 + 4M - 2\cos[2\alpha] - 2M\cos[2t\omega] + M\cos[2\alpha - 2t\omega] + \right. \right. \\
& \quad \quad \left. M\cos[2\alpha + 2t\omega] + 2\sqrt{2} \sqrt{M^2 \left(6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \right. \right.} \\
& \quad \quad \left. \left. \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega] \right) \sin[\alpha]^2 \sin[t\omega]^2} \right) \Big) \Big) \Big) \\
& \quad \left(-4M\omega \cos[t\omega] \sec[\alpha]^2 \sin[t\omega] - 4M\omega \cos[2\alpha] \cos[t\omega] \sec[\alpha]^2 \right.
\end{aligned}$$

$$\begin{aligned}
& \sin[t \omega] + 4 M0 \omega \sin[2 t \omega] + 2 M0 \omega \sin[2 \alpha - 2 t \omega] - \\
& 4 M0 \omega \cos[\alpha - t \omega] \sec[\alpha]^2 \sin[\alpha - t \omega] - 4 M0 \omega \cos[2 \alpha] \\
& \cos[\alpha - t \omega] \sec[\alpha]^2 \sin[\alpha - t \omega] - 2 M0 \omega \sin[2 \alpha + 2 t \omega] + \\
& \left(\sqrt{2} \left(-2 M0^2 \omega \cos[t \omega] \left(-6 - 2 \cos[2 \alpha] + 2 \cos[2 t \omega] - \cos[2 \alpha - 2 t \omega] - \right. \right. \right. \\
& \quad \left. \left. \cos[2 \alpha + 2 t \omega] \right) \sin[\alpha]^2 \sin[t \omega] - M0^2 \sin[\alpha]^2 \sin[t \omega]^2 \right. \\
& \quad \left. \left(-4 \omega \sin[2 t \omega] - 2 \omega \sin[2 \alpha - 2 t \omega] + 2 \omega \sin[2 \alpha + 2 t \omega] \right) \right) \Big) / \\
& \left(\sqrt{ \left(-M0^2 \left(-6 - 2 \cos[2 \alpha] + 2 \cos[2 t \omega] - \cos[2 \alpha - 2 t \omega] - \right. \right. \right. \\
& \quad \left. \left. \cos[2 \alpha + 2 t \omega] \right) \sin[\alpha]^2 \sin[t \omega]^2 \right) \Big) \Big) / \\
& \left(8 \sqrt{ \left(M0^2 \left(6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega] \right) \right. \right. \\
& \quad \left. \left. \sin[\alpha]^2 \sin[t \omega]^2 \right) \right) + \\
& \left(\sqrt{ \left(\frac{1}{1 + \cos[2 \alpha]} \left(-2 + 4 M0 - 2 \cos[2 \alpha] - 2 M0 \cos[2 t \omega] + M0 \cos[2 \alpha - 2 t \omega] + \right. \right. \right. \\
& \quad \left. \left. M0 \cos[2 \alpha + 2 t \omega] - 2 \sqrt{2} \sqrt{ \left(M0^2 \left(6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \right. \right. \right. \right. \\
& \quad \left. \left. \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega] \right) \sin[\alpha]^2 \sin[t \omega]^2 \right) \right) \Big) \Big) \\
& \left(4 M0 \omega \cos[t \omega] \sec[\alpha]^2 \sin[t \omega] + 4 M0 \omega \cos[2 \alpha] \cos[t \omega] \sec[\alpha]^2 \right. \\
& \quad \sin[t \omega] - 4 M0 \omega \sin[2 t \omega] - 2 M0 \omega \sin[2 \alpha - 2 t \omega] + \\
& 4 M0 \omega \cos[\alpha - t \omega] \sec[\alpha]^2 \sin[\alpha - t \omega] + 4 M0 \omega \cos[2 \alpha] \\
& \cos[\alpha - t \omega] \sec[\alpha]^2 \sin[\alpha - t \omega] + 2 M0 \omega \sin[2 \alpha + 2 t \omega] + \\
& \left(\sqrt{2} \left(-2 M0^2 \omega \cos[t \omega] \left(-6 - 2 \cos[2 \alpha] + 2 \cos[2 t \omega] - \cos[2 \alpha - 2 t \omega] - \right. \right. \right. \\
& \quad \left. \left. \cos[2 \alpha + 2 t \omega] \right) \sin[\alpha]^2 \sin[t \omega] - M0^2 \sin[\alpha]^2 \sin[t \omega]^2 \right. \\
& \quad \left. \left(-4 \omega \sin[2 t \omega] - 2 \omega \sin[2 \alpha - 2 t \omega] + 2 \omega \sin[2 \alpha + 2 t \omega] \right) \right) \Big) / \\
& \left(\sqrt{ \left(-M0^2 \left(-6 - 2 \cos[2 \alpha] + 2 \cos[2 t \omega] - \cos[2 \alpha - 2 t \omega] - \right. \right. \right. \\
& \quad \left. \left. \cos[2 \alpha + 2 t \omega] \right) \sin[\alpha]^2 \sin[t \omega]^2 \right) \Big) \Big) / \\
& \left(8 \sqrt{ \left(M0^2 \left(6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega] \right) \right. \right. \\
& \quad \left. \left. \sin[\alpha]^2 \sin[t \omega]^2 \right) \right) \Big) + \\
& \left(- \left(\left(i \omega \cos[\alpha] \cot[\alpha] \cot[t \omega] \csc[t \omega]^2 \left(-4 M0 + 2 M0 \cos[2 t \omega] - \right. \right. \right. \right. \\
& \quad M0 \cos[2 \alpha - 2 t \omega] - M0 \cos[2 \alpha + 2 t \omega] + 2 M0 \cos[\alpha - t \omega]^2 \sec[\alpha]^2 + \\
& \quad 2 M0 \cos[2 \alpha] \cos[\alpha - t \omega]^2 \sec[\alpha]^2 + 2 M0 \sec[\alpha]^2 \sin[t \omega]^2 + \\
& \quad 2 M0 \cos[2 \alpha] \sec[\alpha]^2 \sin[t \omega]^2 + 2 \sqrt{2} \sqrt{ \left(-M0^2 \left(-6 - 2 \cos[2 \alpha] + \right. \right. \right. \\
& \quad \left. \left. 2 \cos[2 t \omega] - \cos[2 \alpha - 2 t \omega] - \cos[2 \alpha + 2 t \omega] \right) \sin[\alpha]^2 \sin[t \omega]^2 \right) \Big) \right) \\
& \sqrt{ \left(\frac{1}{1 + \cos[2 \alpha]} \left(-2 + 4 M0 - 2 \cos[2 \alpha] - 2 M0 \cos[2 t \omega] + M0 \cos[2 \alpha - 2 t \omega] + \right. \right. \\
& \quad \left. \left. M0 \cos[2 \alpha + 2 t \omega] - 2 \sqrt{2} \sqrt{ \left(M0^2 \left(6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \right. \right. \right. \right. \\
& \quad \left. \left. \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega] \right) \sin[\alpha]^2 \sin[t \omega]^2 \right) \right) \Big) \Big) \\
& \left(4 M0 - 2 M0 \cos[2 t \omega] + M0 \cos[2 \alpha - 2 t \omega] + M0 \cos[2 \alpha + 2 t \omega] - \right. \\
& \quad 2 M0 \cos[\alpha - t \omega]^2 \sec[\alpha]^2 - 2 M0 \cos[2 \alpha] \cos[\alpha - t \omega]^2 \sec[\alpha]^2 - \\
& \quad 2 M0 \sec[\alpha]^2 \sin[t \omega]^2 - 2 M0 \cos[2 \alpha] \sec[\alpha]^2 \sin[t \omega]^2 + \\
& \quad \left. 2 \sqrt{2} \sqrt{ \left(M0^2 \left(6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega] \right) \right. \right. \right.
\end{aligned}$$

$$\begin{aligned}
& \left. \sin[\alpha]^2 \sin[t\omega]^2 \right) \Bigg) \Bigg/ \left(16 M0 (1 + \cos[2\alpha]) \sqrt{M0^2 (6 + 2 \cos[2\alpha] - \right. \\
& \left. 2 \cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2} \right) \Bigg) + \\
& \left(i \omega \cos[\alpha] \cot[\alpha] \cot[t\omega] \csc[t\omega]^2 \left(4 M0 - 2 M0 \cos[2t\omega] + \right. \right. \\
& \quad M0 \cos[2\alpha - 2t\omega] + M0 \cos[2\alpha + 2t\omega] - 2 M0 \cos[\alpha - t\omega]^2 \sec[\alpha]^2 - \\
& \quad 2 M0 \cos[2\alpha] \cos[\alpha - t\omega]^2 \sec[\alpha]^2 - 2 M0 \sec[\alpha]^2 \sin[t\omega]^2 - \\
& \quad 2 M0 \cos[2\alpha] \sec[\alpha]^2 \sin[t\omega]^2 + 2 \sqrt{2} \sqrt{-M0^2 (-6 - 2 \cos[2\alpha] + \\
& \quad 2 \cos[2t\omega] - \cos[2\alpha - 2t\omega] - \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2} \Bigg) \Bigg) \\
& \sqrt{\left(\frac{1}{1 + \cos[2\alpha]} \left(-2 + 4 M0 - 2 \cos[2\alpha] - 2 M0 \cos[2t\omega] + M0 \cos[2\alpha - 2t\omega] + \right. \right. \\
& \quad M0 \cos[2\alpha + 2t\omega] + 2 \sqrt{2} \sqrt{M0^2 (6 + 2 \cos[2\alpha] - 2 \cos[2t\omega] + \\
& \quad \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2} \Bigg) \Bigg) \\
& \left(-4 M0 + 2 M0 \cos[2t\omega] - M0 \cos[2\alpha - 2t\omega] - M0 \cos[2\alpha + 2t\omega] + \right. \\
& \quad 2 M0 \cos[\alpha - t\omega]^2 \sec[\alpha]^2 + 2 M0 \cos[2\alpha] \cos[\alpha - t\omega]^2 \sec[\alpha]^2 + \\
& \quad 2 M0 \sec[\alpha]^2 \sin[t\omega]^2 + 2 M0 \cos[2\alpha] \sec[\alpha]^2 \sin[t\omega]^2 + \\
& \quad 2 \sqrt{2} \sqrt{M0^2 (6 + 2 \cos[2\alpha] - 2 \cos[2t\omega] + \cos[2\alpha - 2t\omega] + \\
& \quad \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2} \Bigg) \Bigg) \Bigg/ \\
& \left(16 M0 (1 + \cos[2\alpha]) \sqrt{M0^2 (6 + 2 \cos[2\alpha] - 2 \cos[2t\omega] + \cos[2\alpha - 2t\omega] + \right. \\
& \quad \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2} \Bigg) - \\
& \left(i \cos[\alpha] \cot[\alpha] \csc[t\omega]^2 \left(-4 M0 + 2 M0 \cos[2t\omega] - M0 \cos[2\alpha - 2t\omega] - \right. \right. \\
& \quad M0 \cos[2\alpha + 2t\omega] + 2 M0 \cos[\alpha - t\omega]^2 \sec[\alpha]^2 + \\
& \quad 2 M0 \cos[2\alpha] \cos[\alpha - t\omega]^2 \sec[\alpha]^2 + 2 M0 \sec[\alpha]^2 \sin[t\omega]^2 + \\
& \quad 2 M0 \cos[2\alpha] \sec[\alpha]^2 \sin[t\omega]^2 + 2 \sqrt{2} \sqrt{-M0^2 (-6 - 2 \cos[2\alpha] + \\
& \quad 2 \cos[2t\omega] - \cos[2\alpha - 2t\omega] - \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2} \Bigg) \Bigg) \\
& \sqrt{\left(\frac{1}{1 + \cos[2\alpha]} \left(-2 + 4 M0 - 2 \cos[2\alpha] - 2 M0 \cos[2t\omega] + M0 \cos[2\alpha - 2t\omega] + \right. \right. \\
& \quad M0 \cos[2\alpha + 2t\omega] - 2 \sqrt{2} \sqrt{M0^2 (6 + 2 \cos[2\alpha] - 2 \cos[2t\omega] + \\
& \quad \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2} \Bigg) \Bigg) \\
& \left(4 M0 - 2 M0 \cos[2t\omega] + M0 \cos[2\alpha - 2t\omega] + M0 \cos[2\alpha + 2t\omega] - \right. \\
& \quad 2 M0 \cos[\alpha - t\omega]^2 \sec[\alpha]^2 - 2 M0 \cos[2\alpha] \cos[\alpha - t\omega]^2 \sec[\alpha]^2 - \\
& \quad 2 M0 \sec[\alpha]^2 \sin[t\omega]^2 - 2 M0 \cos[2\alpha] \sec[\alpha]^2 \sin[t\omega]^2 + \\
& \quad 2 \sqrt{2} \sqrt{M0^2 (6 + 2 \cos[2\alpha] - 2 \cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega]) \\
& \quad \sin[\alpha]^2 \sin[t\omega]^2} \Bigg) \left(2 M0^2 \omega \cos[t\omega] (6 + 2 \cos[2\alpha] - 2 \cos[2t\omega] + \right. \\
& \quad \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega] + M0^2 \sin[\alpha]^2 \\
& \quad \sin[t\omega]^2 (4 \omega \sin[2t\omega] + 2 \omega \sin[2\alpha - 2t\omega] - 2 \omega \sin[2\alpha + 2t\omega]) \Bigg) \Bigg) \Bigg/ \\
& \left(64 M0 (1 + \cos[2\alpha]) (M0^2 (6 + 2 \cos[2\alpha] - 2 \cos[2t\omega] + \cos[2\alpha - 2t\omega] + \right.
\end{aligned}$$

$$\begin{aligned}
& \cos[2\alpha + 2t\omega] \sin[\alpha]^2 \sin[t\omega]^2)^{3/2} + \\
& \left(i \cos[\alpha] \cot[\alpha] \csc[t\omega]^2 \left(4M\theta - 2M\theta \cos[2t\omega] + M\theta \cos[2\alpha - 2t\omega] + \right. \right. \\
& \quad M\theta \cos[2\alpha + 2t\omega] - 2M\theta \cos[\alpha - t\omega]^2 \sec[\alpha]^2 - \\
& \quad 2M\theta \cos[2\alpha] \cos[\alpha - t\omega]^2 \sec[\alpha]^2 - 2M\theta \sec[\alpha]^2 \sin[t\omega]^2 - \\
& \quad 2M\theta \cos[2\alpha] \sec[\alpha]^2 \sin[t\omega]^2 + 2\sqrt{2} \sqrt{-M\theta^2 (-6 - 2\cos[2\alpha] + \\
& \quad 2\cos[2t\omega] - \cos[2\alpha - 2t\omega] - \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2} \Big) \\
& \quad \sqrt{\left(\frac{1}{1 + \cos[2\alpha]} \left(-2 + 4M\theta - 2\cos[2\alpha] - 2M\theta \cos[2t\omega] + M\theta \cos[2\alpha - 2t\omega] + \right. \right. \\
& \quad M\theta \cos[2\alpha + 2t\omega] + 2\sqrt{2} \sqrt{M\theta^2 (6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \\
& \quad \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2} \Big) \Big) \\
& \quad \left(-4M\theta + 2M\theta \cos[2t\omega] - M\theta \cos[2\alpha - 2t\omega] - M\theta \cos[2\alpha + 2t\omega] + \right. \\
& \quad 2M\theta \cos[\alpha - t\omega]^2 \sec[\alpha]^2 + 2M\theta \cos[2\alpha] \cos[\alpha - t\omega]^2 \sec[\alpha]^2 + \\
& \quad 2M\theta \sec[\alpha]^2 \sin[t\omega]^2 + 2M\theta \cos[2\alpha] \sec[\alpha]^2 \sin[t\omega]^2 + \\
& \quad 2\sqrt{2} \sqrt{M\theta^2 (6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega]) \\
& \quad \sin[\alpha]^2 \sin[t\omega]^2} \Big) \left(2M\theta^2 \omega \cos[t\omega] (6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \right. \\
& \quad \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega] + M\theta^2 \sin[\alpha]^2 \\
& \quad \sin[t\omega]^2 (4\omega \sin[2t\omega] + 2\omega \sin[2\alpha - 2t\omega] - 2\omega \sin[2\alpha + 2t\omega]) \Big) \Big) / \\
& \quad \left(64M\theta (1 + \cos[2\alpha]) (M\theta^2 (6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \right. \\
& \quad \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2)^{3/2} + \\
& \quad \left(i \cos[\alpha] \cot[\alpha] \csc[t\omega]^2 \left(-4M\theta + 2M\theta \cos[2t\omega] - M\theta \cos[2\alpha - 2t\omega] - \right. \right. \\
& \quad M\theta \cos[2\alpha + 2t\omega] + 2M\theta \cos[\alpha - t\omega]^2 \sec[\alpha]^2 + \\
& \quad 2M\theta \cos[2\alpha] \cos[\alpha - t\omega]^2 \sec[\alpha]^2 + 2M\theta \sec[\alpha]^2 \sin[t\omega]^2 + \\
& \quad 2M\theta \cos[2\alpha] \sec[\alpha]^2 \sin[t\omega]^2 + 2\sqrt{2} \sqrt{-M\theta^2 (-6 - 2\cos[2\alpha] + \\
& \quad 2\cos[2t\omega] - \cos[2\alpha - 2t\omega] - \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2} \Big) \\
& \quad \left(4M\theta - 2M\theta \cos[2t\omega] + M\theta \cos[2\alpha - 2t\omega] + M\theta \cos[2\alpha + 2t\omega] - \right. \\
& \quad 2M\theta \cos[\alpha - t\omega]^2 \sec[\alpha]^2 - 2M\theta \cos[2\alpha] \cos[\alpha - t\omega]^2 \sec[\alpha]^2 - \\
& \quad 2M\theta \sec[\alpha]^2 \sin[t\omega]^2 - 2M\theta \cos[2\alpha] \sec[\alpha]^2 \sin[t\omega]^2 + \\
& \quad 2\sqrt{2} \sqrt{M\theta^2 (6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \\
& \quad \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2} \Big) \\
& \quad \left(4M\theta \omega \sin[2t\omega] + 2M\theta \omega \sin[2\alpha - 2t\omega] - 2M\theta \omega \sin[2\alpha + 2t\omega] - \right. \\
& \quad \left(\sqrt{2} (2M\theta^2 \omega \cos[t\omega] (6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \right. \\
& \quad \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega] + M\theta^2 \sin[\alpha]^2 \sin[t\omega]^2 \\
& \quad (4\omega \sin[2t\omega] + 2\omega \sin[2\alpha - 2t\omega] - 2\omega \sin[2\alpha + 2t\omega]) \Big) \Big) / \\
& \quad \left(\sqrt{M\theta^2 (6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \right. \\
& \quad \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2} \Big) \Big) \Big) / \\
& \quad \left(64M\theta (1 + \cos[2\alpha])^2 \sqrt{M\theta^2 (6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \right. \\
& \quad \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2} \Big)
\end{aligned}$$

$$\begin{aligned}
& \sqrt{\left(\frac{1}{1 + \cos[2\alpha]} \left(-2 + 4M\theta - 2\cos[2\alpha] - 2M\theta\cos[2t\omega] + M\theta\cos[2\alpha - 2t\omega] + \right. \right. \\
& \quad \left. \left. M\theta\cos[2\alpha + 2t\omega] - 2\sqrt{2}\sqrt{M\theta^2(6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \right. \right. \\
& \quad \left. \left. \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega])\sin[\alpha]^2\sin[t\omega]^2} \right) \right) \Bigg) - \\
& \left(i\cos[\alpha]\cot[\alpha]\csc[t\omega]^2 \left(4M\theta - 2M\theta\cos[2t\omega] + M\theta\cos[2\alpha - 2t\omega] + \right. \right. \\
& \quad \left. \left. M\theta\cos[2\alpha + 2t\omega] - 2M\theta\cos[\alpha - t\omega]^2\sec[\alpha]^2 - \right. \right. \\
& \quad \left. \left. 2M\theta\cos[2\alpha]\cos[\alpha - t\omega]^2\sec[\alpha]^2 - 2M\theta\sec[\alpha]^2\sin[t\omega]^2 - \right. \right. \\
& \quad \left. \left. 2M\theta\cos[2\alpha]\sec[\alpha]^2\sin[t\omega]^2 + 2\sqrt{2}\sqrt{-M\theta^2(-6 - 2\cos[2\alpha] + \right. \right. \\
& \quad \left. \left. 2\cos[2t\omega] - \cos[2\alpha - 2t\omega] - \cos[2\alpha + 2t\omega])\sin[\alpha]^2\sin[t\omega]^2} \right) \right) \\
& \left(-4M\theta + 2M\theta\cos[2t\omega] - M\theta\cos[2\alpha - 2t\omega] - M\theta\cos[2\alpha + 2t\omega] + \right. \\
& \quad \left. 2M\theta\cos[\alpha - t\omega]^2\sec[\alpha]^2 + 2M\theta\cos[2\alpha]\cos[\alpha - t\omega]^2\sec[\alpha]^2 + \right. \\
& \quad \left. 2M\theta\sec[\alpha]^2\sin[t\omega]^2 + 2M\theta\cos[2\alpha]\sec[\alpha]^2\sin[t\omega]^2 + \right. \\
& \quad \left. 2\sqrt{2}\sqrt{M\theta^2(6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \right. \\
& \quad \left. \cos[2\alpha + 2t\omega])\sin[\alpha]^2\sin[t\omega]^2} \right) \Bigg) \\
& \left(4M\theta\omega\sin[2t\omega] + 2M\theta\omega\sin[2\alpha - 2t\omega] - 2M\theta\omega\sin[2\alpha + 2t\omega] + \right. \\
& \quad \left(\sqrt{2}(2M\theta^2\omega\cos[t\omega](6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \right. \\
& \quad \left. \cos[2\alpha + 2t\omega])\sin[\alpha]^2\sin[t\omega] + M\theta^2\sin[\alpha]^2\sin[t\omega]^2 \right. \\
& \quad \left. (4\omega\sin[2t\omega] + 2\omega\sin[2\alpha - 2t\omega] - 2\omega\sin[2\alpha + 2t\omega])) \right) \Bigg) / \\
& \left(\sqrt{M\theta^2(6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \right. \\
& \quad \left. \cos[2\alpha + 2t\omega])\sin[\alpha]^2\sin[t\omega]^2} \right) \Bigg) / \\
& \left(64M\theta(1 + \cos[2\alpha])^2\sqrt{M\theta^2(6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \right. \\
& \quad \left. \cos[2\alpha + 2t\omega])\sin[\alpha]^2\sin[t\omega]^2} \right) \\
& \sqrt{\left(\frac{1}{1 + \cos[2\alpha]} \left(-2 + 4M\theta - 2\cos[2\alpha] - 2M\theta\cos[2t\omega] + M\theta\cos[2\alpha - 2t\omega] + \right. \right. \\
& \quad \left. \left. M\theta\cos[2\alpha + 2t\omega] + 2\sqrt{2}\sqrt{M\theta^2(6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \right. \right. \\
& \quad \left. \left. \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega])\sin[\alpha]^2\sin[t\omega]^2} \right) \right) \Bigg) + \\
& \left(i\cos[\alpha]\cot[\alpha]\csc[t\omega]^2 \left(-4M\theta + 2M\theta\cos[2t\omega] - M\theta\cos[2\alpha - 2t\omega] - \right. \right. \\
& \quad \left. \left. M\theta\cos[2\alpha + 2t\omega] + 2M\theta\cos[\alpha - t\omega]^2\sec[\alpha]^2 + \right. \right. \\
& \quad \left. \left. 2M\theta\cos[2\alpha]\cos[\alpha - t\omega]^2\sec[\alpha]^2 + 2M\theta\sec[\alpha]^2\sin[t\omega]^2 + \right. \right. \\
& \quad \left. \left. 2M\theta\cos[2\alpha]\sec[\alpha]^2\sin[t\omega]^2 + 2\sqrt{2}\sqrt{-M\theta^2(-6 - 2\cos[2\alpha] + \right. \right. \\
& \quad \left. \left. 2\cos[2t\omega] - \cos[2\alpha - 2t\omega] - \cos[2\alpha + 2t\omega])\sin[\alpha]^2\sin[t\omega]^2} \right) \right) \\
& \sqrt{\left(\frac{1}{1 + \cos[2\alpha]} \left(-2 + 4M\theta - 2\cos[2\alpha] - 2M\theta\cos[2t\omega] + M\theta\cos[2\alpha - 2t\omega] + \right. \right. \\
& \quad \left. \left. M\theta\cos[2\alpha + 2t\omega] - 2\sqrt{2}\sqrt{M\theta^2(6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \right. \right. \\
& \quad \left. \left. \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega])\sin[\alpha]^2\sin[t\omega]^2} \right) \right) \Bigg) \\
& \left(-4M\theta\omega\cos[t\omega]\sec[\alpha]^2\sin[t\omega] - 4M\theta\omega\cos[2\alpha]\cos[t\omega]\sec[\alpha]^2 \right. \\
& \quad \left. \sin[t\omega] + 4M\theta\omega\sin[2t\omega] + 2M\theta\omega\sin[2\alpha - 2t\omega] - \right.
\end{aligned}$$

$$\begin{aligned}
& 4 M \omega \cos [\alpha - t \omega] \sec [\alpha]^2 \sin [\alpha - t \omega] - 4 M \omega \cos [2 \alpha] \\
& \cos [\alpha - t \omega] \sec [\alpha]^2 \sin [\alpha - t \omega] - 2 M \omega \sin [2 \alpha + 2 t \omega] + \\
& \left(\sqrt{2} \left(2 M^2 \omega \cos [t \omega] \left(6 + 2 \cos [2 \alpha] - 2 \cos [2 t \omega] + \cos [2 \alpha - 2 t \omega] + \right. \right. \right. \\
& \quad \left. \left. \cos [2 \alpha + 2 t \omega] \right) \sin [\alpha]^2 \sin [t \omega] + M^2 \sin [\alpha]^2 \sin [t \omega]^2 \right. \\
& \quad \left. \left(4 \omega \sin [2 t \omega] + 2 \omega \sin [2 \alpha - 2 t \omega] - 2 \omega \sin [2 \alpha + 2 t \omega] \right) \right) \right) / \\
& \left(\sqrt{M^2 \left(6 + 2 \cos [2 \alpha] - 2 \cos [2 t \omega] + \cos [2 \alpha - 2 t \omega] + \right. \right. \\
& \quad \left. \left. \cos [2 \alpha + 2 t \omega] \right) \sin [\alpha]^2 \sin [t \omega]^2} \right) \Bigg) / \\
& \left(32 M \left(1 + \cos [2 \alpha] \right) \sqrt{M^2 \left(6 + 2 \cos [2 \alpha] - 2 \cos [2 t \omega] + \cos [2 \alpha - 2 t \omega] + \right. \right. \\
& \quad \left. \left. \cos [2 \alpha + 2 t \omega] \right) \sin [\alpha]^2 \sin [t \omega]^2} \right) - \\
& \left(i \cos [\alpha] \cot [\alpha] \csc [t \omega]^2 \left(4 M - 2 M \cos [2 t \omega] + M \cos [2 \alpha - 2 t \omega] + \right. \right. \\
& \quad M \cos [2 \alpha + 2 t \omega] - 2 M \cos [\alpha - t \omega]^2 \sec [\alpha]^2 - \\
& \quad 2 M \cos [2 \alpha] \cos [\alpha - t \omega]^2 \sec [\alpha]^2 - 2 M \sec [\alpha]^2 \sin [t \omega]^2 - \\
& \quad 2 M \cos [2 \alpha] \sec [\alpha]^2 \sin [t \omega]^2 + 2 \sqrt{2} \sqrt{-M^2 \left(-6 - 2 \cos [2 \alpha] + \right. \\
& \quad \left. 2 \cos [2 t \omega] - \cos [2 \alpha - 2 t \omega] - \cos [2 \alpha + 2 t \omega] \right) \sin [\alpha]^2 \sin [t \omega]^2} \right) \Bigg) \\
& \sqrt{\left(\frac{1}{1 + \cos [2 \alpha]} \left(-2 + 4 M - 2 \cos [2 \alpha] - 2 M \cos [2 t \omega] + M \cos [2 \alpha - 2 t \omega] + \right. \right. \\
& \quad \left. \left. M \cos [2 \alpha + 2 t \omega] + 2 \sqrt{2} \sqrt{M^2 \left(6 + 2 \cos [2 \alpha] - 2 \cos [2 t \omega] + \right. \right. \right. \\
& \quad \left. \left. \cos [2 \alpha - 2 t \omega] + \cos [2 \alpha + 2 t \omega] \right) \sin [\alpha]^2 \sin [t \omega]^2} \right) \right) \Bigg) \\
& \left(4 M \omega \cos [t \omega] \sec [\alpha]^2 \sin [t \omega] + 4 M \omega \cos [2 \alpha] \cos [t \omega] \sec [\alpha]^2 \right. \\
& \quad \sin [t \omega] - 4 M \omega \sin [2 t \omega] - 2 M \omega \sin [2 \alpha - 2 t \omega] + \\
& \quad 4 M \omega \cos [\alpha - t \omega] \sec [\alpha]^2 \sin [\alpha - t \omega] + 4 M \omega \cos [2 \alpha] \\
& \quad \cos [\alpha - t \omega] \sec [\alpha]^2 \sin [\alpha - t \omega] + 2 M \omega \sin [2 \alpha + 2 t \omega] + \\
& \quad \left(\sqrt{2} \left(2 M^2 \omega \cos [t \omega] \left(6 + 2 \cos [2 \alpha] - 2 \cos [2 t \omega] + \cos [2 \alpha - 2 t \omega] + \right. \right. \right. \\
& \quad \left. \left. \cos [2 \alpha + 2 t \omega] \right) \sin [\alpha]^2 \sin [t \omega] + M^2 \sin [\alpha]^2 \sin [t \omega]^2 \right. \\
& \quad \left. \left(4 \omega \sin [2 t \omega] + 2 \omega \sin [2 \alpha - 2 t \omega] - 2 \omega \sin [2 \alpha + 2 t \omega] \right) \right) \right) \Bigg) / \\
& \left(\sqrt{M^2 \left(6 + 2 \cos [2 \alpha] - 2 \cos [2 t \omega] + \cos [2 \alpha - 2 t \omega] + \right. \right. \\
& \quad \left. \left. \cos [2 \alpha + 2 t \omega] \right) \sin [\alpha]^2 \sin [t \omega]^2} \right) \Bigg) / \\
& \left(32 M \left(1 + \cos [2 \alpha] \right) \sqrt{M^2 \left(6 + 2 \cos [2 \alpha] - 2 \cos [2 t \omega] + \cos [2 \alpha - 2 t \omega] + \right. \right. \\
& \quad \left. \left. \cos [2 \alpha + 2 t \omega] \right) \sin [\alpha]^2 \sin [t \omega]^2} \right) - \\
& \left(i \cos [\alpha] \cot [\alpha] \csc [t \omega]^2 \sqrt{\left(\frac{1}{1 + \cos [2 \alpha]} \left(-2 + 4 M - 2 \cos [2 \alpha] - \right. \right. \right. \\
& \quad \left. \left. 2 M \cos [2 t \omega] + M \cos [2 \alpha - 2 t \omega] + M \cos [2 \alpha + 2 t \omega] + \right. \right. \\
& \quad \left. \left. 2 \sqrt{2} \sqrt{M^2 \left(6 + 2 \cos [2 \alpha] - 2 \cos [2 t \omega] + \cos [2 \alpha - 2 t \omega] + \right. \right. \right. \\
& \quad \left. \left. \cos [2 \alpha + 2 t \omega] \right) \sin [\alpha]^2 \sin [t \omega]^2} \right) \right) \Bigg) \\
& \left(-4 M + 2 M \cos [2 t \omega] - M \cos [2 \alpha - 2 t \omega] - M \cos [2 \alpha + 2 t \omega] + \right. \\
& \quad 2 M \cos [\alpha - t \omega]^2 \sec [\alpha]^2 + 2 M \cos [2 \alpha] \cos [\alpha - t \omega]^2 \sec [\alpha]^2 + \\
& \quad 2 M \sec [\alpha]^2 \sin [t \omega]^2 + 2 M \cos [2 \alpha] \sec [\alpha]^2 \sin [t \omega]^2 + \\
& \quad \left. 2 \sqrt{2} \sqrt{M^2 \left(6 + 2 \cos [2 \alpha] - 2 \cos [2 t \omega] + \cos [2 \alpha - 2 t \omega] + \cos [2 \alpha + 2 t \omega] \right) \right. \right. \\
& \quad \left. \left. \sin [\alpha]^2 \sin [t \omega]^2} \right) \left(-4 M \omega \cos [t \omega] \sec [\alpha]^2 \sin [t \omega] - \right. \right.
\end{aligned}$$

$$\begin{aligned}
& 4 M0 \omega \cos[2 \alpha] \cos[t \omega] \sec[\alpha]^2 \sin[t \omega] + 4 M0 \omega \sin[2 t \omega] + \\
& 2 M0 \omega \sin[2 \alpha - 2 t \omega] - 4 M0 \omega \cos[\alpha - t \omega] \sec[\alpha]^2 \sin[\alpha - t \omega] - \\
& 4 M0 \omega \cos[2 \alpha] \cos[\alpha - t \omega] \sec[\alpha]^2 \sin[\alpha - t \omega] - 2 M0 \omega \sin[2 \alpha + 2 t \omega] + \\
& \left(\sqrt{2} \left(-2 M0^2 \omega \cos[t \omega] \left(-6 - 2 \cos[2 \alpha] + 2 \cos[2 t \omega] - \cos[2 \alpha - 2 t \omega] - \right. \right. \right. \\
& \quad \left. \left. \cos[2 \alpha + 2 t \omega] \right) \sin[\alpha]^2 \sin[t \omega] - M0^2 \sin[\alpha]^2 \sin[t \omega]^2 \right. \\
& \quad \left. \left(-4 \omega \sin[2 t \omega] - 2 \omega \sin[2 \alpha - 2 t \omega] + 2 \omega \sin[2 \alpha + 2 t \omega] \right) \right) \right) / \\
& \left(\sqrt{2} \left(-M0^2 \left(-6 - 2 \cos[2 \alpha] + 2 \cos[2 t \omega] - \cos[2 \alpha - 2 t \omega] - \right. \right. \right. \\
& \quad \left. \left. \cos[2 \alpha + 2 t \omega] \right) \sin[\alpha]^2 \sin[t \omega]^2 \right) \right) \Bigg) / \\
& \left(32 M0 \left(1 + \cos[2 \alpha] \right) \sqrt{M0^2 \left(6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \right. \right. \\
& \quad \left. \left. \cos[2 \alpha + 2 t \omega] \right) \sin[\alpha]^2 \sin[t \omega]^2} \right) + \\
& \left(i \cos[\alpha] \cot[\alpha] \csc[t \omega]^2 \sqrt{\left(\frac{1}{1 + \cos[2 \alpha]} \left(-2 + 4 M0 - 2 \cos[2 \alpha] - \right. \right. \right. \\
& \quad 2 M0 \cos[2 t \omega] + M0 \cos[2 \alpha - 2 t \omega] + M0 \cos[2 \alpha + 2 t \omega] - \\
& \quad 2 \sqrt{2} \sqrt{M0^2 \left(6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \right. \\
& \quad \left. \left. \cos[2 \alpha + 2 t \omega] \right) \sin[\alpha]^2 \sin[t \omega]^2} \right) \right) \Bigg) \\
& \left(4 M0 - 2 M0 \cos[2 t \omega] + M0 \cos[2 \alpha - 2 t \omega] + M0 \cos[2 \alpha + 2 t \omega] - \right. \\
& \quad 2 M0 \cos[\alpha - t \omega]^2 \sec[\alpha]^2 - 2 M0 \cos[2 \alpha] \cos[\alpha - t \omega]^2 \sec[\alpha]^2 - \\
& \quad 2 M0 \sec[\alpha]^2 \sin[t \omega]^2 - 2 M0 \cos[2 \alpha] \sec[\alpha]^2 \sin[t \omega]^2 + \\
& \quad 2 \sqrt{2} \sqrt{M0^2 \left(6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega] \right) \sin[\alpha]^2 \sin[t \omega]^2} \Bigg) \\
& \quad \left(4 M0 \omega \cos[t \omega] \sec[\alpha]^2 \sin[t \omega] + \right. \\
& \quad 4 M0 \omega \cos[2 \alpha] \cos[t \omega] \sec[\alpha]^2 \sin[t \omega] - 4 M0 \omega \sin[2 t \omega] - \\
& \quad 2 M0 \omega \sin[2 \alpha - 2 t \omega] + 4 M0 \omega \cos[\alpha - t \omega] \sec[\alpha]^2 \sin[\alpha - t \omega] + \\
& \quad 4 M0 \omega \cos[2 \alpha] \cos[\alpha - t \omega] \sec[\alpha]^2 \sin[\alpha - t \omega] + 2 M0 \omega \sin[2 \alpha + 2 t \omega] + \\
& \quad \left. \left(\sqrt{2} \left(-2 M0^2 \omega \cos[t \omega] \left(-6 - 2 \cos[2 \alpha] + 2 \cos[2 t \omega] - \cos[2 \alpha - 2 t \omega] - \right. \right. \right. \right. \\
& \quad \left. \left. \cos[2 \alpha + 2 t \omega] \right) \sin[\alpha]^2 \sin[t \omega] - M0^2 \sin[\alpha]^2 \sin[t \omega]^2 \right. \\
& \quad \left. \left(-4 \omega \sin[2 t \omega] - 2 \omega \sin[2 \alpha - 2 t \omega] + 2 \omega \sin[2 \alpha + 2 t \omega] \right) \right) \right) \Bigg) / \\
& \left(\sqrt{2} \left(-M0^2 \left(-6 - 2 \cos[2 \alpha] + 2 \cos[2 t \omega] - \cos[2 \alpha - 2 t \omega] - \right. \right. \right. \\
& \quad \left. \left. \cos[2 \alpha + 2 t \omega] \right) \sin[\alpha]^2 \sin[t \omega]^2 \right) \right) \Bigg) / \\
& \left(32 M0 \left(1 + \cos[2 \alpha] \right) \sqrt{M0^2 \left(6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \right. \right. \\
& \quad \left. \left. \cos[2 \alpha + 2 t \omega] \right) \sin[\alpha]^2 \sin[t \omega]^2} \right) \Bigg) \\
& \left(- \left(\left(i M0 \left(1 + \cos[2 \alpha] \right) \sec[\alpha] \sin[t \omega]^2 \sqrt{\left(\frac{1}{1 + \cos[2 \alpha]} \left(-2 + 4 M0 - \right. \right. \right. \right. \right. \right. \\
& \quad 2 \cos[2 \alpha] - 2 M0 \cos[2 t \omega] + M0 \cos[2 \alpha - 2 t \omega] + \\
& \quad M0 \cos[2 \alpha + 2 t \omega] - 2 \sqrt{2} \sqrt{M0^2 \left(6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \right. \\
& \quad \left. \left. \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega] \right) \sin[\alpha]^2 \sin[t \omega]^2} \right) \right) \Bigg) \\
& \quad \tan[\alpha] \Bigg) / \left(2 \sqrt{M0^2 \left(6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \right. \right. \\
& \quad \left. \left. \cos[2 \alpha + 2 t \omega] \right) \sin[\alpha]^2 \sin[t \omega]^2} \right) \Bigg) +
\end{aligned}$$

$$\begin{aligned}
& \left(\frac{1}{1 + \cos[2\alpha]} \left(-2 + 4M\theta - \frac{2\cos[2\alpha] - 2M\theta\cos[2t\omega] + M\theta\cos[2\alpha - 2t\omega] + M\theta\cos[2\alpha + 2t\omega] + 2\sqrt{2}\sqrt{M\theta^2(6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega])\sin[\alpha]^2\sin[t\omega]^2}} \right) \tan[\alpha] \right) / \\
& \left(2\sqrt{M\theta^2(6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega])\sin[\alpha]^2\sin[t\omega]^2} \right) \Bigg) \\
L12[\alpha_, \omega_, t_, M\theta_, s_, r_, \theta_] := & \frac{1}{M\theta} \sec[\alpha]^2 (\cos[\alpha + t\omega]^2 + \sin[t\omega]^2) \\
& \left(s + \left(\sqrt{\frac{1}{1 + \cos[2\alpha]} \left(-2 + 4M\theta - 2\cos[2\alpha] - 2M\theta\cos[2t\omega] + M\theta\cos[2\alpha - 2t\omega] + M\theta\cos[2\alpha + 2t\omega] - 2\sqrt{2}\sqrt{M\theta^2(6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega])\sin[\alpha]^2\sin[t\omega]^2} \right)} \right) \right. \\
& \left(4M\theta - 2M\theta\cos[2t\omega] + M\theta\cos[2\alpha - 2t\omega] + M\theta\cos[2\alpha + 2t\omega] - 2M\theta\cos[\alpha - t\omega]^2\sec[\alpha]^2 - 2M\theta\cos[2\alpha]\cos[\alpha - t\omega]^2\sec[\alpha]^2 - 2M\theta\sec[\alpha]^2\sin[t\omega]^2 - 2M\theta\cos[2\alpha]\sec[\alpha]^2\sin[t\omega]^2 + 2\sqrt{2}\sqrt{M\theta^2(6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega])\sin[\alpha]^2\sin[t\omega]^2} \right) \Bigg) / \\
& \left(8\sqrt{M\theta^2(6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega])\sin[\alpha]^2\sin[t\omega]^2} \right) + \\
& \left(\sqrt{\frac{1}{1 + \cos[2\alpha]} \left(-2 + 4M\theta - 2\cos[2\alpha] - 2M\theta\cos[2t\omega] + M\theta\cos[2\alpha - 2t\omega] + M\theta\cos[2\alpha + 2t\omega] + 2\sqrt{2}\sqrt{M\theta^2(6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega])\sin[\alpha]^2\sin[t\omega]^2} \right)} \right) \\
& \left(-4M\theta + 2M\theta\cos[2t\omega] - M\theta\cos[2\alpha - 2t\omega] - M\theta\cos[2\alpha + 2t\omega] + 2M\theta\cos[\alpha - t\omega]^2\sec[\alpha]^2 + 2M\theta\cos[2\alpha]\cos[\alpha - t\omega]^2\sec[\alpha]^2 + 2M\theta\sec[\alpha]^2\sin[t\omega]^2 + 2M\theta\cos[2\alpha]\sec[\alpha]^2\sin[t\omega]^2 + 2\sqrt{2}\sqrt{M\theta^2(6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega])\sin[\alpha]^2\sin[t\omega]^2} \right) \Bigg) / \\
& \left(8\sqrt{M\theta^2(6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega])\sin[\alpha]^2\sin[t\omega]^2} \right) \\
& \left(s \left(\left(-4M\theta + 2M\theta\cos[2t\omega] - M\theta\cos[2\alpha - 2t\omega] - M\theta\cos[2\alpha + 2t\omega] + 2M\theta\cos[\alpha - t\omega]^2\sec[\alpha]^2 + 2M\theta\cos[2\alpha]\cos[\alpha - t\omega]^2\sec[\alpha]^2 + 2M\theta\sec[\alpha]^2\sin[t\omega]^2 + 2M\theta\cos[2\alpha]\sec[\alpha]^2\sin[t\omega]^2 + 2\sqrt{2}\sqrt{M\theta^2(6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega])\sin[\alpha]^2\sin[t\omega]^2} \right) \right. \right. \\
& \left. \left. \sqrt{\frac{1}{1 + \cos[2\alpha]} \left(-2 + 4M\theta - 2\cos[2\alpha] - 2M\theta\cos[2t\omega] + M\theta\cos[2\alpha - 2t\omega] + M\theta\cos[2\alpha + 2t\omega] + 2\sqrt{2}\sqrt{M\theta^2(6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega])\sin[\alpha]^2\sin[t\omega]^2} \right)} \right) \right) \right)
\end{aligned}$$

$$\begin{aligned}
& \left(M_0 \cos[2\alpha + 2t\omega] - 2\sqrt{2} \sqrt{M_0^2 (6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \right. \\
& \quad \left. \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2} \right) \Bigg) / \\
& \left(8\sqrt{M_0^2 (6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2} \right) + \\
& \left(4M_0 - 2M_0 \cos[2t\omega] + M_0 \cos[2\alpha - 2t\omega] + M_0 \cos[2\alpha + 2t\omega] - \right. \\
& \quad 2M_0 \cos[\alpha - t\omega]^2 \sec[\alpha]^2 - 2M_0 \cos[2\alpha] \cos[\alpha - t\omega]^2 \sec[\alpha]^2 - 2M_0 \sec[\alpha]^2 \\
& \quad \sin[t\omega]^2 - 2M_0 \cos[2\alpha] \sec[\alpha]^2 \sin[t\omega]^2 + 2\sqrt{2} \sqrt{-M_0^2 (-6 - 2\cos[2\alpha] + \\
& \quad 2\cos[2t\omega] - \cos[2\alpha - 2t\omega] - \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2} \Bigg) \\
& \sqrt{\left(\frac{1}{1 + \cos[2\alpha]} \left(-2 + 4M_0 - 2\cos[2\alpha] - 2M_0 \cos[2t\omega] + M_0 \cos[2\alpha - 2t\omega] + \right. \right. \\
& \quad \left. \left. M_0 \cos[2\alpha + 2t\omega] + 2\sqrt{2} \sqrt{M_0^2 (6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \right. \right. \\
& \quad \left. \left. \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2} \right) \right) \Bigg) / \\
& \left(8\sqrt{M_0^2 (6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2} \right) \Bigg) + \\
& e^{-i\theta} r \left(\left(i \cos[\alpha] \cot[\alpha] \csc[t\omega]^2 \left(-4M_0 + 2M_0 \cos[2t\omega] - M_0 \cos[2\alpha - 2t\omega] - \right. \right. \right. \\
& \quad M_0 \cos[2\alpha + 2t\omega] + 2M_0 \cos[\alpha - t\omega]^2 \sec[\alpha]^2 + \\
& \quad 2M_0 \cos[2\alpha] \cos[\alpha - t\omega]^2 \sec[\alpha]^2 + 2M_0 \sec[\alpha]^2 \sin[t\omega]^2 + \\
& \quad 2M_0 \cos[2\alpha] \sec[\alpha]^2 \sin[t\omega]^2 + 2\sqrt{2} \sqrt{-M_0^2 (-6 - 2\cos[2\alpha] + \\
& \quad 2\cos[2t\omega] - \cos[2\alpha - 2t\omega] - \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2} \Bigg) \\
& \sqrt{\left(\frac{1}{1 + \cos[2\alpha]} \left(-2 + 4M_0 - 2\cos[2\alpha] - 2M_0 \cos[2t\omega] + M_0 \cos[2\alpha - 2t\omega] + \right. \right. \\
& \quad \left. \left. M_0 \cos[2\alpha + 2t\omega] - 2\sqrt{2} \sqrt{M_0^2 (6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \right. \right. \\
& \quad \left. \left. \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2} \right) \right) \Bigg) \\
& \left(4M_0 - 2M_0 \cos[2t\omega] + M_0 \cos[2\alpha - 2t\omega] + M_0 \cos[2\alpha + 2t\omega] - \right. \\
& \quad 2M_0 \cos[\alpha - t\omega]^2 \sec[\alpha]^2 - 2M_0 \cos[2\alpha] \cos[\alpha - t\omega]^2 \sec[\alpha]^2 - 2M_0 \sec[\alpha]^2 \\
& \quad \sin[t\omega]^2 - 2M_0 \cos[2\alpha] \sec[\alpha]^2 \sin[t\omega]^2 + 2\sqrt{2} \sqrt{M_0^2 (6 + 2\cos[2\alpha] - \\
& \quad 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2} \Bigg) \Bigg) / \\
& \left(32M_0 (1 + \cos[2\alpha]) \sqrt{M_0^2 (6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \right. \\
& \quad \left. \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2} \right) - \\
& \left(i \cos[\alpha] \cot[\alpha] \csc[t\omega]^2 \left(4M_0 - 2M_0 \cos[2t\omega] + M_0 \cos[2\alpha - 2t\omega] + \right. \right. \\
& \quad M_0 \cos[2\alpha + 2t\omega] - 2M_0 \cos[\alpha - t\omega]^2 \sec[\alpha]^2 - \\
& \quad 2M_0 \cos[2\alpha] \cos[\alpha - t\omega]^2 \sec[\alpha]^2 - 2M_0 \sec[\alpha]^2 \sin[t\omega]^2 - \\
& \quad 2M_0 \cos[2\alpha] \sec[\alpha]^2 \sin[t\omega]^2 + 2\sqrt{2} \sqrt{-M_0^2 (-6 - 2\cos[2\alpha] + \\
& \quad 2\cos[2t\omega] - \cos[2\alpha - 2t\omega] - \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2} \Bigg) \Bigg)
\end{aligned}$$

$$\begin{aligned}
& \sqrt{\left(\frac{1}{1 + \cos[2\alpha]} \left(-2 + 4M\theta - 2\cos[2\alpha] - 2M\theta\cos[2t\omega] + M\theta\cos[2\alpha - 2t\omega] + \right. \right. \\
& \quad \left. \left. M\theta\cos[2\alpha + 2t\omega] + 2\sqrt{2}\sqrt{M\theta^2(6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \right. \right. \\
& \quad \left. \left. \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega])\sin[\alpha]^2\sin[t\omega]^2} \right) \right) \\
& \left(-4M\theta + 2M\theta\cos[2t\omega] - M\theta\cos[2\alpha - 2t\omega] - M\theta\cos[2\alpha + 2t\omega] + \right. \\
& \quad 2M\theta\cos[\alpha - t\omega]^2\sec[\alpha]^2 + 2M\theta\cos[2\alpha]\cos[\alpha - t\omega]^2\sec[\alpha]^2 + 2M\theta\sec[\alpha]^2 \\
& \quad \sin[t\omega]^2 + 2M\theta\cos[2\alpha]\sec[\alpha]^2\sin[t\omega]^2 + 2\sqrt{2}\sqrt{M\theta^2(6 + 2\cos[2\alpha] - \\
& \quad 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega])\sin[\alpha]^2\sin[t\omega]^2} \left. \right) \Bigg) / \\
& \left(32M\theta(1 + \cos[2\alpha])\sqrt{M\theta^2(6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \right. \\
& \quad \left. \cos[2\alpha + 2t\omega])\sin[\alpha]^2\sin[t\omega]^2} \right) \Bigg) + \\
& \left(\left(i\cos[\alpha]\cot[\alpha]\csc[t\omega]^2 \left(-4M\theta + 2M\theta\cos[2t\omega] - M\theta\cos[2\alpha - 2t\omega] - \right. \right. \right. \\
& \quad \left. \left. M\theta\cos[2\alpha + 2t\omega] + 2M\theta\cos[\alpha - t\omega]^2\sec[\alpha]^2 + \right. \right. \\
& \quad \left. \left. 2M\theta\cos[2\alpha]\cos[\alpha - t\omega]^2\sec[\alpha]^2 + 2M\theta\sec[\alpha]^2\sin[t\omega]^2 + \right. \right. \\
& \quad \left. \left. 2M\theta\cos[2\alpha]\sec[\alpha]^2\sin[t\omega]^2 + 2\sqrt{2}\sqrt{-M\theta^2(-6 - 2\cos[2\alpha] + \right. \right. \\
& \quad \left. \left. 2\cos[2t\omega] - \cos[2\alpha - 2t\omega] - \cos[2\alpha + 2t\omega])\sin[\alpha]^2\sin[t\omega]^2} \right) \right) \\
& \sqrt{\left(\frac{1}{1 + \cos[2\alpha]} \left(-2 + 4M\theta - 2\cos[2\alpha] - 2M\theta\cos[2t\omega] + M\theta\cos[2\alpha - 2t\omega] + \right. \right. \\
& \quad \left. \left. M\theta\cos[2\alpha + 2t\omega] - 2\sqrt{2}\sqrt{M\theta^2(6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \right. \right. \\
& \quad \left. \left. \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega])\sin[\alpha]^2\sin[t\omega]^2} \right) \right) \\
& \left(4M\theta - 2M\theta\cos[2t\omega] + M\theta\cos[2\alpha - 2t\omega] + M\theta\cos[2\alpha + 2t\omega] - \right. \\
& \quad 2M\theta\cos[\alpha - t\omega]^2\sec[\alpha]^2 - 2M\theta\cos[2\alpha]\cos[\alpha - t\omega]^2\sec[\alpha]^2 - \\
& \quad 2M\theta\sec[\alpha]^2\sin[t\omega]^2 - 2M\theta\cos[2\alpha]\sec[\alpha]^2\sin[t\omega]^2 + \\
& \quad 2\sqrt{2}\sqrt{M\theta^2(6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \right. \\
& \quad \left. \cos[2\alpha + 2t\omega])\sin[\alpha]^2\sin[t\omega]^2} \left. \right) \Bigg) / \\
& \left(32M\theta(1 + \cos[2\alpha])\sqrt{M\theta^2(6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \right. \\
& \quad \left. \cos[2\alpha + 2t\omega])\sin[\alpha]^2\sin[t\omega]^2} \right) - \\
& \left(i\cos[\alpha]\cot[\alpha]\csc[t\omega]^2 \left(4M\theta - 2M\theta\cos[2t\omega] + M\theta\cos[2\alpha - 2t\omega] + \right. \right. \\
& \quad \left. \left. M\theta\cos[2\alpha + 2t\omega] - 2M\theta\cos[\alpha - t\omega]^2\sec[\alpha]^2 - \right. \right. \\
& \quad \left. \left. 2M\theta\cos[2\alpha]\cos[\alpha - t\omega]^2\sec[\alpha]^2 - 2M\theta\sec[\alpha]^2\sin[t\omega]^2 - \right. \right. \\
& \quad \left. \left. 2M\theta\cos[2\alpha]\sec[\alpha]^2\sin[t\omega]^2 + 2\sqrt{2}\sqrt{-M\theta^2(-6 - 2\cos[2\alpha] + \right. \right. \\
& \quad \left. \left. 2\cos[2t\omega] - \cos[2\alpha - 2t\omega] - \cos[2\alpha + 2t\omega])\sin[\alpha]^2\sin[t\omega]^2} \right) \right) \\
& \sqrt{\left(\frac{1}{1 + \cos[2\alpha]} \left(-2 + 4M\theta - 2\cos[2\alpha] - 2M\theta\cos[2t\omega] + M\theta\cos[2\alpha - 2t\omega] + \right. \right. \\
& \quad \left. \left. M\theta\cos[2\alpha + 2t\omega] + 2\sqrt{2}\sqrt{M\theta^2(6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \right. \right. \\
& \quad \left. \left. \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega])\sin[\alpha]^2\sin[t\omega]^2} \right) \right)
\end{aligned}$$

$$\begin{aligned}
& \left(-4 M0 + 2 M0 \cos[2 t \omega] - M0 \cos[2 \alpha - 2 t \omega] - M0 \cos[2 \alpha + 2 t \omega] + \right. \\
& \quad 2 M0 \cos[\alpha - t \omega]^2 \sec[\alpha]^2 + 2 M0 \cos[2 \alpha] \cos[\alpha - t \omega]^2 \sec[\alpha]^2 + \\
& \quad 2 M0 \sec[\alpha]^2 \sin[t \omega]^2 + 2 M0 \cos[2 \alpha] \sec[\alpha]^2 \sin[t \omega]^2 + \\
& \quad \left. 2 \sqrt{2} \sqrt{M0^2 (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \right.} \\
& \quad \left. \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega]^2) \right) \Bigg) / \\
& \left(32 M0 (1 + \cos[2 \alpha]) \sqrt{M0^2 (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \right.} \\
& \quad \left. \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega]^2) \right) \Bigg) \\
& \left(e^{i \theta} r \left(\left(-4 M0 + 2 M0 \cos[2 t \omega] - M0 \cos[2 \alpha - 2 t \omega] - M0 \cos[2 \alpha + 2 t \omega] + \right. \right. \right. \\
& \quad \left. \left. 2 M0 \cos[\alpha - t \omega]^2 \sec[\alpha]^2 + 2 M0 \cos[2 \alpha] \cos[\alpha - t \omega]^2 \sec[\alpha]^2 + 2 M0 \sec[\alpha]^2 \right. \right. \\
& \quad \left. \left. \sin[t \omega]^2 + 2 M0 \cos[2 \alpha] \sec[\alpha]^2 \sin[t \omega]^2 + 2 \sqrt{2} \sqrt{-M0^2 (-6 - 2 \cos[2 \alpha] + \right. \right.} \\
& \quad \left. \left. 2 \cos[2 t \omega] - \cos[2 \alpha - 2 t \omega] - \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega]^2) \right) \right. \\
& \quad \left. \sqrt{\left(\frac{1}{1 + \cos[2 \alpha]} (-2 + 4 M0 - 2 \cos[2 \alpha] - 2 M0 \cos[2 t \omega] + M0 \cos[2 \alpha - 2 t \omega] + \right. \right.} \\
& \quad \left. \left. M0 \cos[2 \alpha + 2 t \omega] - 2 \sqrt{2} \sqrt{M0^2 (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \right. \right.} \\
& \quad \left. \left. \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega]^2) \right) \right) \Bigg) / \\
& \left(8 \sqrt{M0^2 (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega]) \right.} \\
& \quad \left. \sin[\alpha]^2 \sin[t \omega]^2) \right) + \\
& \left(\left(4 M0 - 2 M0 \cos[2 t \omega] + M0 \cos[2 \alpha - 2 t \omega] + M0 \cos[2 \alpha + 2 t \omega] - \right. \right. \\
& \quad \left. \left. 2 M0 \cos[\alpha - t \omega]^2 \sec[\alpha]^2 - 2 M0 \cos[2 \alpha] \cos[\alpha - t \omega]^2 \sec[\alpha]^2 - 2 M0 \sec[\alpha]^2 \right. \right. \\
& \quad \left. \left. \sin[t \omega]^2 - 2 M0 \cos[2 \alpha] \sec[\alpha]^2 \sin[t \omega]^2 + 2 \sqrt{2} \sqrt{-M0^2 (-6 - 2 \cos[2 \alpha] + \right. \right.} \\
& \quad \left. \left. 2 \cos[2 t \omega] - \cos[2 \alpha - 2 t \omega] - \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega]^2) \right) \right. \\
& \quad \left. \sqrt{\left(\frac{1}{1 + \cos[2 \alpha]} (-2 + 4 M0 - 2 \cos[2 \alpha] - 2 M0 \cos[2 t \omega] + M0 \cos[2 \alpha - 2 t \omega] + \right. \right.} \\
& \quad \left. \left. M0 \cos[2 \alpha + 2 t \omega] + 2 \sqrt{2} \sqrt{M0^2 (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \right. \right.} \\
& \quad \left. \left. \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega]^2) \right) \right) \Bigg) / \\
& \left(8 \sqrt{M0^2 (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega]) \right.} \\
& \quad \left. \sin[\alpha]^2 \sin[t \omega]^2) \right) \Bigg) + \\
& s \left(\left(i \cos[\alpha] \cot[\alpha] \csc[t \omega]^2 (-4 M0 + 2 M0 \cos[2 t \omega] - M0 \cos[2 \alpha - 2 t \omega] - \right. \right. \\
& \quad \left. \left. M0 \cos[2 \alpha + 2 t \omega] + 2 M0 \cos[\alpha - t \omega]^2 \sec[\alpha]^2 + \right. \right. \\
& \quad \left. \left. 2 M0 \cos[2 \alpha] \cos[\alpha - t \omega]^2 \sec[\alpha]^2 + 2 M0 \sec[\alpha]^2 \sin[t \omega]^2 + \right. \right. \\
& \quad \left. \left. 2 M0 \cos[2 \alpha] \sec[\alpha]^2 \sin[t \omega]^2 + 2 \sqrt{2} \sqrt{-M0^2 (-6 - 2 \cos[2 \alpha] + \right. \right.} \\
& \quad \left. \left. 2 \cos[2 t \omega] - \cos[2 \alpha - 2 t \omega] - \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega]^2) \right) \right. \\
& \quad \left. \sqrt{\left(\frac{1}{1 + \cos[2 \alpha]} (-2 + 4 M0 - 2 \cos[2 \alpha] - 2 M0 \cos[2 t \omega] + M0 \cos[2 \alpha - 2 t \omega] + \right. \right.} \\
& \quad \left. \left. M0 \cos[2 \alpha + 2 t \omega] - 2 \sqrt{2} \sqrt{M0^2 (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \right. \right.}
\end{aligned}$$

$$\begin{aligned}
& \left. \left(\cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega] \right) \sin[\alpha]^2 \sin[t\omega]^2 \right) \Bigg) \\
& \left(4M\theta - 2M\theta \cos[2t\omega] + M\theta \cos[2\alpha - 2t\omega] + M\theta \cos[2\alpha + 2t\omega] - \right. \\
& \quad 2M\theta \cos[\alpha - t\omega]^2 \sec[\alpha]^2 - 2M\theta \cos[2\alpha] \cos[\alpha - t\omega]^2 \sec[\alpha]^2 - 2M\theta \sec[\alpha]^2 \\
& \quad \sin[t\omega]^2 - 2M\theta \cos[2\alpha] \sec[\alpha]^2 \sin[t\omega]^2 + 2\sqrt{2} \sqrt{M\theta^2 (6 + 2\cos[2\alpha] - \\
& \quad 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2} \Bigg) \Bigg) / \\
& \left(32M\theta (1 + \cos[2\alpha]) \sqrt{M\theta^2 (6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \right. \\
& \quad \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2} \Bigg) - \\
& \left(i \cos[\alpha] \cot[\alpha] \csc[t\omega]^2 \left(4M\theta - 2M\theta \cos[2t\omega] + M\theta \cos[2\alpha - 2t\omega] + \right. \right. \\
& \quad M\theta \cos[2\alpha + 2t\omega] - 2M\theta \cos[\alpha - t\omega]^2 \sec[\alpha]^2 - \\
& \quad 2M\theta \cos[2\alpha] \cos[\alpha - t\omega]^2 \sec[\alpha]^2 - 2M\theta \sec[\alpha]^2 \sin[t\omega]^2 - \\
& \quad 2M\theta \cos[2\alpha] \sec[\alpha]^2 \sin[t\omega]^2 + 2\sqrt{2} \sqrt{-M\theta^2 (-6 - 2\cos[2\alpha] + \\
& \quad 2\cos[2t\omega] - \cos[2\alpha - 2t\omega] - \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2} \Bigg) \Bigg) \\
& \sqrt{\left(\frac{1}{1 + \cos[2\alpha]} \left(-2 + 4M\theta - 2\cos[2\alpha] - 2M\theta \cos[2t\omega] + M\theta \cos[2\alpha - 2t\omega] + \right. \right. \\
& \quad M\theta \cos[2\alpha + 2t\omega] + 2\sqrt{2} \sqrt{M\theta^2 (6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \\
& \quad \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2} \Bigg) \Bigg) \\
& \left(-4M\theta + 2M\theta \cos[2t\omega] - M\theta \cos[2\alpha - 2t\omega] - M\theta \cos[2\alpha + 2t\omega] + \right. \\
& \quad 2M\theta \cos[\alpha - t\omega]^2 \sec[\alpha]^2 + 2M\theta \cos[2\alpha] \cos[\alpha - t\omega]^2 \sec[\alpha]^2 + 2M\theta \sec[\alpha]^2 \\
& \quad \sin[t\omega]^2 + 2M\theta \cos[2\alpha] \sec[\alpha]^2 \sin[t\omega]^2 + 2\sqrt{2} \sqrt{M\theta^2 (6 + 2\cos[2\alpha] - \\
& \quad 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2} \Bigg) \Bigg) / \\
& \left(32M\theta (1 + \cos[2\alpha]) \sqrt{M\theta^2 (6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \right. \\
& \quad \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2} \Bigg) \Bigg) + \\
& i \left(\left(\left(i \cos[\alpha] \cot[\alpha] \csc[t\omega]^2 \left(-4M\theta + 2M\theta \cos[2t\omega] - M\theta \cos[2\alpha - 2t\omega] - \right. \right. \right. \right. \\
& \quad M\theta \cos[2\alpha + 2t\omega] + 2M\theta \cos[\alpha - t\omega]^2 \sec[\alpha]^2 + \\
& \quad 2M\theta \cos[2\alpha] \cos[\alpha - t\omega]^2 \sec[\alpha]^2 + 2M\theta \sec[\alpha]^2 \sin[t\omega]^2 + \\
& \quad 2M\theta \cos[2\alpha] \sec[\alpha]^2 \sin[t\omega]^2 + 2\sqrt{2} \sqrt{-M\theta^2 (-6 - 2\cos[2\alpha] + \\
& \quad 2\cos[2t\omega] - \cos[2\alpha - 2t\omega] - \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2} \Bigg) \Bigg) \\
& \sqrt{\left(\frac{1}{1 + \cos[2\alpha]} \left(-2 + 4M\theta - 2\cos[2\alpha] - 2M\theta \cos[2t\omega] + M\theta \cos[2\alpha - 2t\omega] + \right. \right. \\
& \quad M\theta \cos[2\alpha + 2t\omega] - 2\sqrt{2} \sqrt{M\theta^2 (6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \\
& \quad \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2} \Bigg) \Bigg) \\
& \left(4M\theta - 2M\theta \cos[2t\omega] + M\theta \cos[2\alpha - 2t\omega] + M\theta \cos[2\alpha + 2t\omega] - \right. \\
& \quad 2M\theta \cos[\alpha - t\omega]^2 \sec[\alpha]^2 - 2M\theta \cos[2\alpha] \cos[\alpha - t\omega]^2 \sec[\alpha]^2 - 2M\theta \sec[\alpha]^2 \\
& \quad \sin[t\omega]^2 - 2M\theta \cos[2\alpha] \sec[\alpha]^2 \sin[t\omega]^2 + 2\sqrt{2} \sqrt{M\theta^2 (6 + 2\cos[2\alpha] - \\
& \quad 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2} \Bigg) \Bigg) /
\end{aligned}$$

$$\begin{aligned}
& \left(32 M0 (1 + \cos[2\alpha]) \sqrt{M0^2 (6 + 2 \cos[2\alpha] - 2 \cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2} \right) - \\
& \left(i \cos[\alpha] \cot[\alpha] \csc[t\omega]^2 \left(4 M0 - 2 M0 \cos[2t\omega] + M0 \cos[2\alpha - 2t\omega] + \right. \right. \\
& \quad M0 \cos[2\alpha + 2t\omega] - 2 M0 \cos[\alpha - t\omega]^2 \sec[\alpha]^2 - \\
& \quad 2 M0 \cos[2\alpha] \cos[\alpha - t\omega]^2 \sec[\alpha]^2 - 2 M0 \sec[\alpha]^2 \sin[t\omega]^2 - \\
& \quad \left. 2 M0 \cos[2\alpha] \sec[\alpha]^2 \sin[t\omega]^2 + 2 \sqrt{2} \sqrt{-M0^2 (-6 - 2 \cos[2\alpha] + \right. \\
& \quad \left. 2 \cos[2t\omega] - \cos[2\alpha - 2t\omega] - \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2} \right) \Big) \\
& \sqrt{\left(\frac{1}{1 + \cos[2\alpha]} \left(-2 + 4 M0 - 2 \cos[2\alpha] - 2 M0 \cos[2t\omega] + M0 \cos[2\alpha - 2t\omega] + \right. \right. \\
& \quad M0 \cos[2\alpha + 2t\omega] + 2 \sqrt{2} \sqrt{M0^2 (6 + 2 \cos[2\alpha] - 2 \cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2} \Big) \Big) \\
& \left(-4 M0 + 2 M0 \cos[2t\omega] - M0 \cos[2\alpha - 2t\omega] - M0 \cos[2\alpha + 2t\omega] + \right. \\
& \quad 2 M0 \cos[\alpha - t\omega]^2 \sec[\alpha]^2 + 2 M0 \cos[2\alpha] \cos[\alpha - t\omega]^2 \sec[\alpha]^2 + 2 M0 \sec[\alpha]^2 \sin[t\omega]^2 \\
& \quad \left. + 2 M0 \cos[2\alpha] \sec[\alpha]^2 \sin[t\omega]^2 + 2 \sqrt{2} \sqrt{M0^2 (6 + 2 \cos[2\alpha] - 2 \cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2} \right) \Big) \Big) / \\
& \left(32 M0 (1 + \cos[2\alpha]) \sqrt{M0^2 (6 + 2 \cos[2\alpha] - 2 \cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2} \right) \Big) \\
& \left(- \left(\left(-4 M0 + 2 M0 \cos[2t\omega] - M0 \cos[2\alpha - 2t\omega] - M0 \cos[2\alpha + 2t\omega] + \right. \right. \right. \\
& \quad 2 M0 \cos[\alpha - t\omega]^2 \sec[\alpha]^2 + 2 M0 \cos[2\alpha] \cos[\alpha - t\omega]^2 \sec[\alpha]^2 + 2 M0 \sec[\alpha]^2 \sin[t\omega]^2 \\
& \quad \left. + 2 M0 \cos[2\alpha] \sec[\alpha]^2 \sin[t\omega]^2 + 2 \sqrt{2} \sqrt{-M0^2 (-6 - 2 \cos[2\alpha] + 2 \cos[2t\omega] - \cos[2\alpha - 2t\omega] - \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2} \right) \Big) \\
& \sqrt{\left(\frac{1}{1 + \cos[2\alpha]} \left(-2 + 4 M0 - 2 \cos[2\alpha] - 2 M0 \cos[2t\omega] + M0 \cos[2\alpha - 2t\omega] + \right. \right. \\
& \quad M0 \cos[2\alpha + 2t\omega] - 2 \sqrt{2} \sqrt{M0^2 (6 + 2 \cos[2\alpha] - 2 \cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2} \Big) \Big) \\
& \left(2 M0^2 \omega \cos[t\omega] (6 + 2 \cos[2\alpha] - 2 \cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega] + M0^2 \sin[\alpha]^2 \sin[t\omega]^2 \right. \\
& \quad \left. (4 \omega \sin[2t\omega] + 2 \omega \sin[2\alpha - 2t\omega] - 2 \omega \sin[2\alpha + 2t\omega]) \right) \Big) / \\
& \left(16 (M0^2 (6 + 2 \cos[2\alpha] - 2 \cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2)^{3/2} \right) \Big) - \\
& \left(\left(4 M0 - 2 M0 \cos[2t\omega] + M0 \cos[2\alpha - 2t\omega] + M0 \cos[2\alpha + 2t\omega] - \right. \right. \\
& \quad 2 M0 \cos[\alpha - t\omega]^2 \sec[\alpha]^2 - 2 M0 \cos[2\alpha] \cos[\alpha - t\omega]^2 \sec[\alpha]^2 - 2 M0 \sec[\alpha]^2 \sin[t\omega]^2 \\
& \quad \left. - 2 M0 \cos[2\alpha] \sec[\alpha]^2 \sin[t\omega]^2 + 2 \sqrt{2} \sqrt{-M0^2 (-6 - 2 \cos[2\alpha] + 2 \cos[2t\omega] - \cos[2\alpha - 2t\omega] - \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2} \right) \Big)
\end{aligned}$$

$$\begin{aligned}
& \sqrt{\left(\frac{1}{1 + \cos[2\alpha]} \left(-2 + 4M\theta - 2\cos[2\alpha] - 2M\theta\cos[2t\omega] + M\theta\cos[2\alpha - 2t\omega] + \right. \right. \\
& \quad \left. \left. M\theta\cos[2\alpha + 2t\omega] + 2\sqrt{2} \sqrt{M\theta^2 (6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \right. \right. \\
& \quad \left. \left. \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2} \right) \right) \\
& \quad \left(2M\theta^2 \omega \cos[t\omega] (6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \right. \\
& \quad \left. \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega] + M\theta^2 \sin[\alpha]^2 \sin[t\omega]^2 \right. \\
& \quad \left. (4\omega \sin[2t\omega] + 2\omega \sin[2\alpha - 2t\omega] - 2\omega \sin[2\alpha + 2t\omega]) \right) \Bigg) / \\
& \quad \left(16 (M\theta^2 (6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega]) \right. \\
& \quad \left. \sin[\alpha]^2 \sin[t\omega]^2)^{3/2} \right) + \\
& \quad \left(\left(-4M\theta + 2M\theta\cos[2t\omega] - M\theta\cos[2\alpha - 2t\omega] - M\theta\cos[2\alpha + 2t\omega] + \right. \right. \\
& \quad \left. \left. 2M\theta\cos[\alpha - t\omega]^2 \sec[\alpha]^2 + 2M\theta\cos[2\alpha]\cos[\alpha - t\omega]^2 \sec[\alpha]^2 + 2M\theta\sec[\alpha]^2 \right. \right. \\
& \quad \left. \left. \sin[t\omega]^2 + 2M\theta\cos[2\alpha]\sec[\alpha]^2 \sin[t\omega]^2 + 2\sqrt{2} \sqrt{-M\theta^2 (-6 - 2\cos[2\alpha] + \right. \right. \\
& \quad \left. \left. 2\cos[2t\omega] - \cos[2\alpha - 2t\omega] - \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2} \right) \right) \\
& \quad \left(4M\theta\omega \sin[2t\omega] + 2M\theta\omega \sin[2\alpha - 2t\omega] - 2M\theta\omega \sin[2\alpha + 2t\omega] - \right. \\
& \quad \left(\sqrt{2} (2M\theta^2 \omega \cos[t\omega] (6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \right. \\
& \quad \left. \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega] + M\theta^2 \sin[\alpha]^2 \sin[t\omega]^2 \right. \\
& \quad \left. (4\omega \sin[2t\omega] + 2\omega \sin[2\alpha - 2t\omega] - 2\omega \sin[2\alpha + 2t\omega]) \right) \Bigg) / \\
& \quad \left(\sqrt{M\theta^2 (6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \right. \\
& \quad \left. \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2} \right) \Bigg) / \\
& \quad \left(16 (1 + \cos[2\alpha]) \sqrt{M\theta^2 (6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \right. \\
& \quad \left. \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2} \right) \\
& \quad \sqrt{\left(\frac{1}{1 + \cos[2\alpha]} \left(-2 + 4M\theta - 2\cos[2\alpha] - 2M\theta\cos[2t\omega] + M\theta\cos[2\alpha - 2t\omega] + \right. \right. \\
& \quad \left. \left. M\theta\cos[2\alpha + 2t\omega] - 2\sqrt{2} \sqrt{M\theta^2 (6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \right. \right. \\
& \quad \left. \left. \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2} \right) \right) \Bigg) + \\
& \quad \left(\left(4M\theta - 2M\theta\cos[2t\omega] + M\theta\cos[2\alpha - 2t\omega] + M\theta\cos[2\alpha + 2t\omega] - 2M\theta \right. \right. \\
& \quad \left. \left. \cos[\alpha - t\omega]^2 \sec[\alpha]^2 - 2M\theta\cos[2\alpha]\cos[\alpha - t\omega]^2 \sec[\alpha]^2 - 2M\theta\sec[\alpha]^2 \right. \right. \\
& \quad \left. \left. \sin[t\omega]^2 - 2M\theta\cos[2\alpha]\sec[\alpha]^2 \sin[t\omega]^2 + 2\sqrt{2} \sqrt{-M\theta^2 (-6 - 2\cos[2\alpha] + \right. \right. \\
& \quad \left. \left. 2\cos[2t\omega] - \cos[2\alpha - 2t\omega] - \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2} \right) \right) \\
& \quad \left(4M\theta\omega \sin[2t\omega] + 2M\theta\omega \sin[2\alpha - 2t\omega] - 2M\theta\omega \sin[2\alpha + 2t\omega] + \right. \\
& \quad \left(\sqrt{2} (2M\theta^2 \omega \cos[t\omega] (6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \right. \\
& \quad \left. \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega] + M\theta^2 \sin[\alpha]^2 \sin[t\omega]^2 \right. \\
& \quad \left. (4\omega \sin[2t\omega] + 2\omega \sin[2\alpha - 2t\omega] - 2\omega \sin[2\alpha + 2t\omega]) \right) \Bigg) / \\
& \quad \left(\sqrt{M\theta^2 (6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \right. \\
& \quad \left. \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2} \right) \Bigg) /
\end{aligned}$$

$$\begin{aligned}
& \left(16 (1 + \cos[2\alpha]) \sqrt{M\theta^2 (6 + 2 \cos[2\alpha] - 2 \cos[2t\omega] + \cos[2\alpha - 2t\omega] + \right. \\
& \quad \left. \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2} \right. \\
& \quad \left. \sqrt{\left(\frac{1}{1 + \cos[2\alpha]} (-2 + 4M\theta - 2 \cos[2\alpha] - 2M\theta \cos[2t\omega] + M\theta \cos[2\alpha - 2t\omega] + \right. \right. \\
& \quad \left. \left. M\theta \cos[2\alpha + 2t\omega] + 2\sqrt{2} \sqrt{M\theta^2 (6 + 2 \cos[2\alpha] - 2 \cos[2t\omega] + \right. \right. \\
& \quad \left. \left. \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2} \right)} \right) + \\
& \left(\sqrt{\left(\frac{1}{1 + \cos[2\alpha]} (-2 + 4M\theta - 2 \cos[2\alpha] - 2M\theta \cos[2t\omega] + M\theta \cos[2\alpha - 2t\omega] + \right. \right. \\
& \quad \left. \left. M\theta \cos[2\alpha + 2t\omega] + 2\sqrt{2} \sqrt{M\theta^2 (6 + 2 \cos[2\alpha] - 2 \cos[2t\omega] + \right. \right. \\
& \quad \left. \left. \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2} \right)} \right) \\
& \quad \left(-4M\theta\omega \cos[t\omega] \sec[\alpha]^2 \sin[t\omega] - 4M\theta\omega \cos[2\alpha] \cos[t\omega] \sec[\alpha]^2 \right. \\
& \quad \sin[t\omega] + 4M\theta\omega \sin[2t\omega] + 2M\theta\omega \sin[2\alpha - 2t\omega] - \\
& \quad 4M\theta\omega \cos[\alpha - t\omega] \sec[\alpha]^2 \sin[\alpha - t\omega] - 4M\theta\omega \cos[2\alpha] \\
& \quad \cos[\alpha - t\omega] \sec[\alpha]^2 \sin[\alpha - t\omega] - 2M\theta\omega \sin[2\alpha + 2t\omega] + \\
& \quad \left(\sqrt{2} (-2M\theta^2\omega \cos[t\omega] (-6 - 2 \cos[2\alpha] + 2 \cos[2t\omega] - \cos[2\alpha - 2t\omega] - \right. \\
& \quad \left. \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega] - M\theta^2 \sin[\alpha]^2 \sin[t\omega]^2 \right. \\
& \quad \left. (-4\omega \sin[2t\omega] - 2\omega \sin[2\alpha - 2t\omega] + 2\omega \sin[2\alpha + 2t\omega]) \right) \Big/ \\
& \quad \left(\sqrt{(-M\theta^2 (-6 - 2 \cos[2\alpha] + 2 \cos[2t\omega] - \cos[2\alpha - 2t\omega] - \right. \\
& \quad \left. \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2} \right) \Big/ \\
& \quad \left(8 \sqrt{M\theta^2 (6 + 2 \cos[2\alpha] - 2 \cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega]) \right. \\
& \quad \left. \sin[\alpha]^2 \sin[t\omega]^2} \right) + \\
& \left(\sqrt{\left(\frac{1}{1 + \cos[2\alpha]} (-2 + 4M\theta - 2 \cos[2\alpha] - 2M\theta \cos[2t\omega] + M\theta \cos[2\alpha - 2t\omega] + \right. \right. \\
& \quad \left. \left. M\theta \cos[2\alpha + 2t\omega] - 2\sqrt{2} \sqrt{M\theta^2 (6 + 2 \cos[2\alpha] - 2 \cos[2t\omega] + \right. \right. \\
& \quad \left. \left. \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2} \right)} \right) \\
& \quad \left(4M\theta\omega \cos[t\omega] \sec[\alpha]^2 \sin[t\omega] + 4M\theta\omega \cos[2\alpha] \cos[t\omega] \sec[\alpha]^2 \right. \\
& \quad \sin[t\omega] - 4M\theta\omega \sin[2t\omega] - 2M\theta\omega \sin[2\alpha - 2t\omega] + \\
& \quad 4M\theta\omega \cos[\alpha - t\omega] \sec[\alpha]^2 \sin[\alpha - t\omega] + 4M\theta\omega \cos[2\alpha] \\
& \quad \cos[\alpha - t\omega] \sec[\alpha]^2 \sin[\alpha - t\omega] + 2M\theta\omega \sin[2\alpha + 2t\omega] + \\
& \quad \left(\sqrt{2} (-2M\theta^2\omega \cos[t\omega] (-6 - 2 \cos[2\alpha] + 2 \cos[2t\omega] - \cos[2\alpha - 2t\omega] - \right. \\
& \quad \left. \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega] - M\theta^2 \sin[\alpha]^2 \sin[t\omega]^2 \right. \\
& \quad \left. (-4\omega \sin[2t\omega] - 2\omega \sin[2\alpha - 2t\omega] + 2\omega \sin[2\alpha + 2t\omega]) \right) \Big/ \\
& \quad \left(\sqrt{(-M\theta^2 (-6 - 2 \cos[2\alpha] + 2 \cos[2t\omega] - \cos[2\alpha - 2t\omega] - \right. \\
& \quad \left. \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2} \right) \Big/ \\
& \quad \left(8 \sqrt{M\theta^2 (6 + 2 \cos[2\alpha] - 2 \cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega]) \right. \\
& \quad \left. \sin[\alpha]^2 \sin[t\omega]^2} \right) +
\end{aligned}$$

$$\begin{aligned}
& \left(\left(\sqrt{\left(\frac{1}{1 + \cos[2\alpha]} \left(-2 + 4M0 - 2\cos[2\alpha] - 2M0\cos[2t\omega] + M0\cos[2\alpha - 2t\omega] + \right. \right. \right. \right. \\
& \quad \left. \left. \left. M0\cos[2\alpha + 2t\omega] - 2\sqrt{2} \sqrt{M0^2 (6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \right. \right. \right. \right. \\
& \quad \left. \left. \left. \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2 \right) \right) \right) \right) \\
& \left(4M0 - 2M0\cos[2t\omega] + M0\cos[2\alpha - 2t\omega] + M0\cos[2\alpha + 2t\omega] - \right. \\
& \quad 2M0\cos[\alpha - t\omega]^2 \sec[\alpha]^2 - 2M0\cos[2\alpha] \cos[\alpha - t\omega]^2 \sec[\alpha]^2 - 2M0\sec[\alpha]^2 \\
& \quad \sin[t\omega]^2 - 2M0\cos[2\alpha] \sec[\alpha]^2 \sin[t\omega]^2 + 2\sqrt{2} \sqrt{M0^2 (6 + 2\cos[2\alpha] - \\
& \quad \left. 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2} \right) \Big) \Big) / \\
& \left(8\sqrt{M0^2 (6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega])} \right. \\
& \quad \left. \sin[\alpha]^2 \sin[t\omega]^2 \right) + \\
& \left(\sqrt{\left(\frac{1}{1 + \cos[2\alpha]} \left(-2 + 4M0 - 2\cos[2\alpha] - 2M0\cos[2t\omega] + M0\cos[2\alpha - 2t\omega] + \right. \right. \right. \right. \\
& \quad \left. \left. \left. M0\cos[2\alpha + 2t\omega] + 2\sqrt{2} \sqrt{M0^2 (6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \right. \right. \right. \right. \\
& \quad \left. \left. \left. \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2 \right) \right) \right) \right) \\
& \left(-4M0 + 2M0\cos[2t\omega] - M0\cos[2\alpha - 2t\omega] - M0\cos[2\alpha + 2t\omega] + \right. \\
& \quad 2M0\cos[\alpha - t\omega]^2 \sec[\alpha]^2 + 2M0\cos[2\alpha] \cos[\alpha - t\omega]^2 \sec[\alpha]^2 + 2M0\sec[\alpha]^2 \\
& \quad \sin[t\omega]^2 + 2M0\cos[2\alpha] \sec[\alpha]^2 \sin[t\omega]^2 + 2\sqrt{2} \sqrt{M0^2 (6 + 2\cos[2\alpha] - \\
& \quad \left. 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2} \right) \Big) \Big) / \\
& \left(8\sqrt{M0^2 (6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega])} \right. \\
& \quad \left. \sin[\alpha]^2 \sin[t\omega]^2 \right) \Big) \\
& \left(- \left(\left(i\omega \cos[\alpha] \cot[\alpha] \cot[t\omega] \csc[t\omega]^2 \left(-4M0 + 2M0\cos[2t\omega] - \right. \right. \right. \right. \right. \\
& \quad \left. \left. \left. M0\cos[2\alpha - 2t\omega] - M0\cos[2\alpha + 2t\omega] + 2M0\cos[\alpha - t\omega]^2 \sec[\alpha]^2 + \right. \right. \right. \right. \\
& \quad \left. \left. \left. 2M0\cos[2\alpha] \cos[\alpha - t\omega]^2 \sec[\alpha]^2 + 2M0\sec[\alpha]^2 \sin[t\omega]^2 + \right. \right. \right. \right. \\
& \quad \left. \left. \left. 2M0\cos[2\alpha] \sec[\alpha]^2 \sin[t\omega]^2 + 2\sqrt{2} \sqrt{-M0^2 (-6 - 2\cos[2\alpha] + \right. \right. \right. \right. \\
& \quad \left. \left. \left. 2\cos[2t\omega] - \cos[2\alpha - 2t\omega] - \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2} \right) \right) \right) \right) \\
& \sqrt{\left(\frac{1}{1 + \cos[2\alpha]} \left(-2 + 4M0 - 2\cos[2\alpha] - 2M0\cos[2t\omega] + M0\cos[2\alpha - 2t\omega] + \right. \right. \right. \right. \\
& \quad \left. \left. \left. M0\cos[2\alpha + 2t\omega] - 2\sqrt{2} \sqrt{M0^2 (6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \right. \right. \right. \right. \\
& \quad \left. \left. \left. \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2 \right) \right) \right) \Big) \Big) \\
& \left(4M0 - 2M0\cos[2t\omega] + M0\cos[2\alpha - 2t\omega] + M0\cos[2\alpha + 2t\omega] - \right. \\
& \quad 2M0\cos[\alpha - t\omega]^2 \sec[\alpha]^2 - 2M0\cos[2\alpha] \cos[\alpha - t\omega]^2 \sec[\alpha]^2 - \\
& \quad 2M0\sec[\alpha]^2 \sin[t\omega]^2 - 2M0\cos[2\alpha] \sec[\alpha]^2 \sin[t\omega]^2 + \\
& \quad \left. 2\sqrt{2} \sqrt{M0^2 (6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega])} \right. \\
& \quad \left. \sin[\alpha]^2 \sin[t\omega]^2 \right) \Big) \Big) / (16M0 (1 + \cos[2\alpha]) \sqrt{M0^2 (6 + 2\cos[2\alpha] -}
\end{aligned}$$

$$\begin{aligned}
& \left. 2 \cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega] \right) \sin[\alpha]^2 \sin[t\omega]^2 \Big) \Big) + \\
& \left(i\omega \cos[\alpha] \cot[\alpha] \cot[t\omega] \csc[t\omega]^2 \left(4M\theta - 2M\theta \cos[2t\omega] + \right. \right. \\
& \quad M\theta \cos[2\alpha - 2t\omega] + M\theta \cos[2\alpha + 2t\omega] - 2M\theta \cos[\alpha - t\omega]^2 \sec[\alpha]^2 - \\
& \quad 2M\theta \cos[2\alpha] \cos[\alpha - t\omega]^2 \sec[\alpha]^2 - 2M\theta \sec[\alpha]^2 \sin[t\omega]^2 - \\
& \quad 2M\theta \cos[2\alpha] \sec[\alpha]^2 \sin[t\omega]^2 + 2\sqrt{2} \sqrt{-M\theta^2 (-6 - 2\cos[2\alpha] + \\
& \quad 2\cos[2t\omega] - \cos[2\alpha - 2t\omega] - \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2} \Big) \Big) \\
& \sqrt{\left(\frac{1}{1 + \cos[2\alpha]} \left(-2 + 4M\theta - 2\cos[2\alpha] - 2M\theta \cos[2t\omega] + M\theta \cos[2\alpha - 2t\omega] + \right. \right. \\
& \quad M\theta \cos[2\alpha + 2t\omega] + 2\sqrt{2} \sqrt{M\theta^2 (6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \\
& \quad \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2} \Big) \Big) \\
& \left(-4M\theta + 2M\theta \cos[2t\omega] - M\theta \cos[2\alpha - 2t\omega] - M\theta \cos[2\alpha + 2t\omega] + \right. \\
& \quad 2M\theta \cos[\alpha - t\omega]^2 \sec[\alpha]^2 + 2M\theta \cos[2\alpha] \cos[\alpha - t\omega]^2 \sec[\alpha]^2 + \\
& \quad 2M\theta \sec[\alpha]^2 \sin[t\omega]^2 + 2M\theta \cos[2\alpha] \sec[\alpha]^2 \sin[t\omega]^2 + \\
& \quad 2\sqrt{2} \sqrt{M\theta^2 (6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \\
& \quad \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2} \Big) \Big) / \\
& \left(16M\theta (1 + \cos[2\alpha]) \sqrt{M\theta^2 (6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \right. \\
& \quad \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2} \Big) - \\
& \left(i\cos[\alpha] \cot[\alpha] \csc[t\omega]^2 \left(-4M\theta + 2M\theta \cos[2t\omega] - M\theta \cos[2\alpha - 2t\omega] - \right. \right. \\
& \quad M\theta \cos[2\alpha + 2t\omega] + 2M\theta \cos[\alpha - t\omega]^2 \sec[\alpha]^2 + \\
& \quad 2M\theta \cos[2\alpha] \cos[\alpha - t\omega]^2 \sec[\alpha]^2 + 2M\theta \sec[\alpha]^2 \sin[t\omega]^2 + \\
& \quad 2M\theta \cos[2\alpha] \sec[\alpha]^2 \sin[t\omega]^2 + 2\sqrt{2} \sqrt{-M\theta^2 (-6 - 2\cos[2\alpha] + \\
& \quad 2\cos[2t\omega] - \cos[2\alpha - 2t\omega] - \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2} \Big) \Big) \\
& \sqrt{\left(\frac{1}{1 + \cos[2\alpha]} \left(-2 + 4M\theta - 2\cos[2\alpha] - 2M\theta \cos[2t\omega] + M\theta \cos[2\alpha - 2t\omega] + \right. \right. \\
& \quad M\theta \cos[2\alpha + 2t\omega] - 2\sqrt{2} \sqrt{M\theta^2 (6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \\
& \quad \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2} \Big) \Big) \\
& \left(4M\theta - 2M\theta \cos[2t\omega] + M\theta \cos[2\alpha - 2t\omega] + M\theta \cos[2\alpha + 2t\omega] - \right. \\
& \quad 2M\theta \cos[\alpha - t\omega]^2 \sec[\alpha]^2 - 2M\theta \cos[2\alpha] \cos[\alpha - t\omega]^2 \sec[\alpha]^2 - \\
& \quad 2M\theta \sec[\alpha]^2 \sin[t\omega]^2 - 2M\theta \cos[2\alpha] \sec[\alpha]^2 \sin[t\omega]^2 + \\
& \quad 2\sqrt{2} \sqrt{M\theta^2 (6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2} \Big) \Big) \\
& \quad \left(2M\theta^2 \omega \cos[t\omega] (6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \right. \\
& \quad \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega] + M\theta^2 \sin[\alpha]^2 \\
& \quad \sin[t\omega]^2 (4\omega \sin[2t\omega] + 2\omega \sin[2\alpha - 2t\omega] - 2\omega \sin[2\alpha + 2t\omega]) \Big) \Big) / \\
& \left(64M\theta (1 + \cos[2\alpha]) \left(M\theta^2 (6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \right. \right. \\
& \quad \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2 \Big)^{3/2} \Big) +
\end{aligned}$$

$$\begin{aligned}
& \left(\frac{1}{2} \cos[\alpha] \cot[\alpha] \csc[t\omega]^2 \left(4M\theta - 2M\theta \cos[2t\omega] + M\theta \cos[2\alpha - 2t\omega] + \right. \right. \\
& \quad M\theta \cos[2\alpha + 2t\omega] - 2M\theta \cos[\alpha - t\omega]^2 \sec[\alpha]^2 - \\
& \quad 2M\theta \cos[2\alpha] \cos[\alpha - t\omega]^2 \sec[\alpha]^2 - 2M\theta \sec[\alpha]^2 \sin[t\omega]^2 - \\
& \quad \left. 2M\theta \cos[2\alpha] \sec[\alpha]^2 \sin[t\omega]^2 + 2\sqrt{2} \sqrt{-M\theta^2 (-6 - 2\cos[2\alpha] + \right. \\
& \quad \left. 2\cos[2t\omega] - \cos[2\alpha - 2t\omega] - \cos[2\alpha + 2t\omega])} \sin[\alpha]^2 \sin[t\omega]^2 \right) \Big) \\
& \sqrt{\left(\frac{1}{1 + \cos[2\alpha]} \left(-2 + 4M\theta - 2\cos[2\alpha] - 2M\theta \cos[2t\omega] + M\theta \cos[2\alpha - 2t\omega] + \right. \right. \\
& \quad M\theta \cos[2\alpha + 2t\omega] + 2\sqrt{2} \sqrt{M\theta^2 (6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega])} \sin[\alpha]^2 \sin[t\omega]^2 \Big) \Big)} \\
& \left(-4M\theta + 2M\theta \cos[2t\omega] - M\theta \cos[2\alpha - 2t\omega] - M\theta \cos[2\alpha + 2t\omega] + \right. \\
& \quad 2M\theta \cos[\alpha - t\omega]^2 \sec[\alpha]^2 + 2M\theta \cos[2\alpha] \cos[\alpha - t\omega]^2 \sec[\alpha]^2 + \\
& \quad 2M\theta \sec[\alpha]^2 \sin[t\omega]^2 + 2M\theta \cos[2\alpha] \sec[\alpha]^2 \sin[t\omega]^2 + \\
& \quad \left. 2\sqrt{2} \sqrt{M\theta^2 (6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega])} \sin[\alpha]^2 \sin[t\omega]^2 \right) \Big) \\
& \quad \left(2M\theta^2 \omega \cos[t\omega] (6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega] + M\theta^2 \sin[\alpha]^2 \right. \\
& \quad \left. \sin[t\omega]^2 (4\omega \sin[2t\omega] + 2\omega \sin[2\alpha - 2t\omega] - 2\omega \sin[2\alpha + 2t\omega]) \right) \Big) \Big) / \\
& \left(64M\theta (1 + \cos[2\alpha]) (M\theta^2 (6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2)^{3/2} \right) + \\
& \left(\frac{1}{2} \cos[\alpha] \cot[\alpha] \csc[t\omega]^2 \left(-4M\theta + 2M\theta \cos[2t\omega] - M\theta \cos[2\alpha - 2t\omega] - \right. \right. \\
& \quad M\theta \cos[2\alpha + 2t\omega] + 2M\theta \cos[\alpha - t\omega]^2 \sec[\alpha]^2 + \\
& \quad 2M\theta \cos[2\alpha] \cos[\alpha - t\omega]^2 \sec[\alpha]^2 + 2M\theta \sec[\alpha]^2 \sin[t\omega]^2 + \\
& \quad \left. 2M\theta \cos[2\alpha] \sec[\alpha]^2 \sin[t\omega]^2 + 2\sqrt{2} \sqrt{-M\theta^2 (-6 - 2\cos[2\alpha] + \right. \\
& \quad \left. 2\cos[2t\omega] - \cos[2\alpha - 2t\omega] - \cos[2\alpha + 2t\omega])} \sin[\alpha]^2 \sin[t\omega]^2 \right) \Big) \\
& \left(4M\theta - 2M\theta \cos[2t\omega] + M\theta \cos[2\alpha - 2t\omega] + M\theta \cos[2\alpha + 2t\omega] - \right. \\
& \quad 2M\theta \cos[\alpha - t\omega]^2 \sec[\alpha]^2 - 2M\theta \cos[2\alpha] \cos[\alpha - t\omega]^2 \sec[\alpha]^2 - 2M\theta \sec[\alpha]^2 \sin[t\omega]^2 - \\
& \quad \left. 2M\theta \cos[2\alpha] \sec[\alpha]^2 \sin[t\omega]^2 + 2\sqrt{2} \sqrt{M\theta^2 (6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega])} \sin[\alpha]^2 \sin[t\omega]^2 \right) \Big) \\
& \left(4M\theta \omega \sin[2t\omega] + 2M\theta \omega \sin[2\alpha - 2t\omega] - 2M\theta \omega \sin[2\alpha + 2t\omega] - \right. \\
& \quad \left(\sqrt{2} (2M\theta^2 \omega \cos[t\omega] (6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega] + M\theta^2 \sin[\alpha]^2 \sin[t\omega]^2 \right. \\
& \quad \left. (4\omega \sin[2t\omega] + 2\omega \sin[2\alpha - 2t\omega] - 2\omega \sin[2\alpha + 2t\omega]) \right) \Big) \Big) / \\
& \left(\sqrt{M\theta^2 (6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega])} \sin[\alpha]^2 \sin[t\omega]^2 \right) \Big) \Big) / \\
& \left(64M\theta (1 + \cos[2\alpha])^2 \sqrt{M\theta^2 (6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega])} \sin[\alpha]^2 \sin[t\omega]^2 \right) \\
& \sqrt{\left(\frac{1}{1 + \cos[2\alpha]} \left(-2 + 4M\theta - 2\cos[2\alpha] - 2M\theta \cos[2t\omega] + M\theta \cos[2\alpha - 2t\omega] + \right. \right.}
\end{aligned}$$

$$\begin{aligned}
& M0 \cos[2\alpha + 2t\omega] - 2\sqrt{2} \sqrt{M0^2 (6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \\
& \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2} \Big) \Big) - \\
& \left(i \cos[\alpha] \cot[\alpha] \csc[t\omega]^2 \left(4M0 - 2M0 \cos[2t\omega] + M0 \cos[2\alpha - 2t\omega] + \right. \right. \\
& M0 \cos[2\alpha + 2t\omega] - 2M0 \cos[\alpha - t\omega]^2 \sec[\alpha]^2 - \\
& 2M0 \cos[2\alpha] \cos[\alpha - t\omega]^2 \sec[\alpha]^2 - 2M0 \sec[\alpha]^2 \sin[t\omega]^2 - \\
& 2M0 \cos[2\alpha] \sec[\alpha]^2 \sin[t\omega]^2 + 2\sqrt{2} \sqrt{-M0^2 (-6 - 2\cos[2\alpha] + \\
& 2\cos[2t\omega] - \cos[2\alpha - 2t\omega] - \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2} \Big) \\
& (-4M0 + 2M0 \cos[2t\omega] - M0 \cos[2\alpha - 2t\omega] - M0 \cos[2\alpha + 2t\omega] + \\
& 2M0 \cos[\alpha - t\omega]^2 \sec[\alpha]^2 + 2M0 \cos[2\alpha] \cos[\alpha - t\omega]^2 \sec[\alpha]^2 + \\
& 2M0 \sec[\alpha]^2 \sin[t\omega]^2 + 2M0 \cos[2\alpha] \sec[\alpha]^2 \sin[t\omega]^2 + \\
& 2\sqrt{2} \sqrt{M0^2 (6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \\
& \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2} \Big) \\
& (4M0\omega \sin[2t\omega] + 2M0\omega \sin[2\alpha - 2t\omega] - 2M0\omega \sin[2\alpha + 2t\omega] + \\
& \left(\sqrt{2} (2M0^2\omega \cos[t\omega] (6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \right. \\
& \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega] + M0^2 \sin[\alpha]^2 \sin[t\omega]^2 \\
& (4\omega \sin[2t\omega] + 2\omega \sin[2\alpha - 2t\omega] - 2\omega \sin[2\alpha + 2t\omega]) \Big) \Big) \Big) / \\
& \left(\sqrt{M0^2 (6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \right. \\
& \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2} \Big) \Big) \Big) / \\
& \left(64M0 (1 + \cos[2\alpha])^2 \sqrt{M0^2 (6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \right. \\
& \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2} \Big) \\
& \sqrt{\left(\frac{1}{1 + \cos[2\alpha]} (-2 + 4M0 - 2\cos[2\alpha] - 2M0 \cos[2t\omega] + M0 \cos[2\alpha - 2t\omega] + \right. \\
& M0 \cos[2\alpha + 2t\omega] + 2\sqrt{2} \sqrt{M0^2 (6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \\
& \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2} \Big) \Big) \Big) + \\
& \left(i \cos[\alpha] \cot[\alpha] \csc[t\omega]^2 (-4M0 + 2M0 \cos[2t\omega] - M0 \cos[2\alpha - 2t\omega] - \right. \\
& M0 \cos[2\alpha + 2t\omega] + 2M0 \cos[\alpha - t\omega]^2 \sec[\alpha]^2 + \\
& 2M0 \cos[2\alpha] \cos[\alpha - t\omega]^2 \sec[\alpha]^2 + 2M0 \sec[\alpha]^2 \sin[t\omega]^2 + \\
& 2M0 \cos[2\alpha] \sec[\alpha]^2 \sin[t\omega]^2 + 2\sqrt{2} \sqrt{-M0^2 (-6 - 2\cos[2\alpha] + \\
& 2\cos[2t\omega] - \cos[2\alpha - 2t\omega] - \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2} \Big) \\
& \sqrt{\left(\frac{1}{1 + \cos[2\alpha]} (-2 + 4M0 - 2\cos[2\alpha] - 2M0 \cos[2t\omega] + M0 \cos[2\alpha - 2t\omega] + \right. \\
& M0 \cos[2\alpha + 2t\omega] - 2\sqrt{2} \sqrt{M0^2 (6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \\
& \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2} \Big) \Big) \Big) \\
& (-4M0\omega \cos[t\omega] \sec[\alpha]^2 \sin[t\omega] - 4M0\omega \cos[2\alpha] \cos[t\omega] \sec[\alpha]^2 \\
& \sin[t\omega] + 4M0\omega \sin[2t\omega] + 2M0\omega \sin[2\alpha - 2t\omega] - \\
& 4M0\omega \cos[\alpha - t\omega] \sec[\alpha]^2 \sin[\alpha - t\omega] - 4M0\omega \cos[2\alpha] \\
& \cos[\alpha - t\omega] \sec[\alpha]^2 \sin[\alpha - t\omega] - 2M0\omega \sin[2\alpha + 2t\omega] +
\end{aligned}$$

$$\begin{aligned}
& \left(\sqrt{2} \left(2 M \omega^2 \cos[t \omega] \left(6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \right. \right. \right. \\
& \quad \left. \left. \cos[2 \alpha + 2 t \omega] \right) \sin[\alpha]^2 \sin[t \omega] + M \omega^2 \sin[\alpha]^2 \sin[t \omega]^2 \right. \\
& \quad \left. \left(4 \omega \sin[2 t \omega] + 2 \omega \sin[2 \alpha - 2 t \omega] - 2 \omega \sin[2 \alpha + 2 t \omega] \right) \right) \Bigg) / \\
& \left(\sqrt{M^2 \left(6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \right. \right. \\
& \quad \left. \left. \cos[2 \alpha + 2 t \omega] \right) \sin[\alpha]^2 \sin[t \omega]^2} \right) \Bigg) / \\
& \left(32 M \left(1 + \cos[2 \alpha] \right) \sqrt{M^2 \left(6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \right. \right. \\
& \quad \left. \left. \cos[2 \alpha + 2 t \omega] \right) \sin[\alpha]^2 \sin[t \omega]^2} \right) - \\
& \left(i \cos[\alpha] \cot[\alpha] \csc[t \omega]^2 \left(4 M - 2 M \cos[2 t \omega] + M \cos[2 \alpha - 2 t \omega] + \right. \right. \\
& \quad M \cos[2 \alpha + 2 t \omega] - 2 M \cos[\alpha - t \omega]^2 \sec[\alpha]^2 - \\
& \quad 2 M \cos[2 \alpha] \cos[\alpha - t \omega]^2 \sec[\alpha]^2 - 2 M \sec[\alpha]^2 \sin[t \omega]^2 - \\
& \quad 2 M \cos[2 \alpha] \sec[\alpha]^2 \sin[t \omega]^2 + 2 \sqrt{2} \sqrt{-M^2 (-6 - 2 \cos[2 \alpha] + \\
& \quad 2 \cos[2 t \omega] - \cos[2 \alpha - 2 t \omega] - \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega]^2} \Bigg) \\
& \sqrt{\left(\frac{1}{1 + \cos[2 \alpha]} \left(-2 + 4 M - 2 \cos[2 \alpha] - 2 M \cos[2 t \omega] + M \cos[2 \alpha - 2 t \omega] + \right. \right. \\
& \quad \left. \left. M \cos[2 \alpha + 2 t \omega] + 2 \sqrt{2} \sqrt{M^2 \left(6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \right. \right. \right. \\
& \quad \left. \left. \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega] \right) \sin[\alpha]^2 \sin[t \omega]^2} \right) \Bigg) \\
& \left(4 M \omega \cos[t \omega] \sec[\alpha]^2 \sin[t \omega] + 4 M \omega \cos[2 \alpha] \cos[t \omega] \sec[\alpha]^2 \right. \\
& \quad \sin[t \omega] - 4 M \omega \sin[2 t \omega] - 2 M \omega \sin[2 \alpha - 2 t \omega] + \\
& \quad 4 M \omega \cos[\alpha - t \omega] \sec[\alpha]^2 \sin[\alpha - t \omega] + 4 M \omega \cos[2 \alpha] \\
& \quad \cos[\alpha - t \omega] \sec[\alpha]^2 \sin[\alpha - t \omega] + 2 M \omega \sin[2 \alpha + 2 t \omega] + \\
& \quad \left(\sqrt{2} \left(2 M^2 \omega \cos[t \omega] \left(6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \right. \right. \right. \\
& \quad \left. \left. \cos[2 \alpha + 2 t \omega] \right) \sin[\alpha]^2 \sin[t \omega] + M^2 \sin[\alpha]^2 \sin[t \omega]^2 \right. \\
& \quad \left. \left(4 \omega \sin[2 t \omega] + 2 \omega \sin[2 \alpha - 2 t \omega] - 2 \omega \sin[2 \alpha + 2 t \omega] \right) \right) \Bigg) / \\
& \left(\sqrt{M^2 \left(6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \right. \right. \\
& \quad \left. \left. \cos[2 \alpha + 2 t \omega] \right) \sin[\alpha]^2 \sin[t \omega]^2} \right) \Bigg) / \\
& \left(32 M \left(1 + \cos[2 \alpha] \right) \sqrt{M^2 \left(6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \right. \right. \\
& \quad \left. \left. \cos[2 \alpha + 2 t \omega] \right) \sin[\alpha]^2 \sin[t \omega]^2} \right) - \\
& \left(i \cos[\alpha] \cot[\alpha] \csc[t \omega]^2 \sqrt{\left(\frac{1}{1 + \cos[2 \alpha]} \left(-2 + 4 M - 2 \cos[2 \alpha] - \right. \right. \right. \\
& \quad 2 M \cos[2 t \omega] + M \cos[2 \alpha - 2 t \omega] + M \cos[2 \alpha + 2 t \omega] + \\
& \quad 2 \sqrt{2} \sqrt{M^2 \left(6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \right. \right. \\
& \quad \left. \left. \cos[2 \alpha + 2 t \omega] \right) \sin[\alpha]^2 \sin[t \omega]^2} \right) \Bigg) \\
& \left(-4 M + 2 M \cos[2 t \omega] - M \cos[2 \alpha - 2 t \omega] - M \cos[2 \alpha + 2 t \omega] + \right. \\
& \quad 2 M \cos[\alpha - t \omega]^2 \sec[\alpha]^2 + 2 M \cos[2 \alpha] \cos[\alpha - t \omega]^2 \sec[\alpha]^2 + \\
& \quad 2 M \sec[\alpha]^2 \sin[t \omega]^2 + 2 M \cos[2 \alpha] \sec[\alpha]^2 \sin[t \omega]^2 + \\
& \quad 2 \sqrt{2} \sqrt{M^2 \left(6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega] \right) \sin[\alpha]^2 \sin[t \omega]^2} \Bigg) \\
& \quad \left(-4 M \omega \cos[t \omega] \sec[\alpha]^2 \sin[t \omega] - \right. \\
& \quad 4 M \omega \cos[2 \alpha] \cos[t \omega] \sec[\alpha]^2 \sin[t \omega] + 4 M \omega \sin[2 t \omega] + \\
& \quad 2 M \omega \sin[2 \alpha - 2 t \omega] - 4 M \omega \cos[\alpha - t \omega] \sec[\alpha]^2 \sin[\alpha - t \omega] -
\end{aligned}$$

$$\begin{aligned}
& 4 M \theta \omega \cos[2 \alpha] \cos[\alpha - t \omega] \sec[\alpha]^2 \sin[\alpha - t \omega] - 2 M \theta \omega \sin[2 \alpha + 2 t \omega] + \\
& \left(\sqrt{2} \left(-2 M \theta^2 \omega \cos[t \omega] \left(-6 - 2 \cos[2 \alpha] + 2 \cos[2 t \omega] - \cos[2 \alpha - 2 t \omega] - \right. \right. \right. \\
& \quad \left. \left. \cos[2 \alpha + 2 t \omega] \right) \sin[\alpha]^2 \sin[t \omega] - M \theta^2 \sin[\alpha]^2 \sin[t \omega]^2 \right. \\
& \quad \left. \left. \left(-4 \omega \sin[2 t \omega] - 2 \omega \sin[2 \alpha - 2 t \omega] + 2 \omega \sin[2 \alpha + 2 t \omega] \right) \right) \right) / \\
& \left(\sqrt{-M \theta^2 \left(-6 - 2 \cos[2 \alpha] + 2 \cos[2 t \omega] - \cos[2 \alpha - 2 t \omega] - \right. \right. \\
& \quad \left. \left. \cos[2 \alpha + 2 t \omega] \right) \sin[\alpha]^2 \sin[t \omega]^2} \right) \Bigg) / \\
& \left(32 M \theta \left(1 + \cos[2 \alpha] \right) \sqrt{M \theta^2 \left(6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \right. \right. \\
& \quad \left. \left. \cos[2 \alpha + 2 t \omega] \right) \sin[\alpha]^2 \sin[t \omega]^2} \right) + \\
& \left(i \cos[\alpha] \cot[\alpha] \csc[t \omega]^2 \sqrt{\left(\frac{1}{1 + \cos[2 \alpha]} \left(-2 + 4 M \theta - 2 \cos[2 \alpha] - \right. \right. \right. \\
& \quad \left. \left. 2 M \theta \cos[2 t \omega] + M \theta \cos[2 \alpha - 2 t \omega] + M \theta \cos[2 \alpha + 2 t \omega] - \right. \right. \\
& \quad \left. \left. 2 \sqrt{2} \sqrt{M \theta^2 \left(6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \right. \right. \right. \\
& \quad \left. \left. \cos[2 \alpha + 2 t \omega] \right) \sin[\alpha]^2 \sin[t \omega]^2} \right) \right) \Bigg) \\
& \left(4 M \theta - 2 M \theta \cos[2 t \omega] + M \theta \cos[2 \alpha - 2 t \omega] + M \theta \cos[2 \alpha + 2 t \omega] - \right. \\
& \quad 2 M \theta \cos[\alpha - t \omega]^2 \sec[\alpha]^2 - 2 M \theta \cos[2 \alpha] \cos[\alpha - t \omega]^2 \sec[\alpha]^2 - \\
& \quad 2 M \theta \sec[\alpha]^2 \sin[t \omega]^2 - 2 M \theta \cos[2 \alpha] \sec[\alpha]^2 \sin[t \omega]^2 + \\
& \quad \left. 2 \sqrt{2} \sqrt{M \theta^2 \left(6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega] \right) \right. \right. \\
& \quad \left. \left. \sin[\alpha]^2 \sin[t \omega]^2} \right) \right) \left(4 M \theta \omega \cos[t \omega] \sec[\alpha]^2 \sin[t \omega] + \right. \\
& \quad 4 M \theta \omega \cos[2 \alpha] \cos[t \omega] \sec[\alpha]^2 \sin[t \omega] - 4 M \theta \omega \sin[2 t \omega] - \\
& \quad 2 M \theta \omega \sin[2 \alpha - 2 t \omega] + 4 M \theta \omega \cos[\alpha - t \omega] \sec[\alpha]^2 \sin[\alpha - t \omega] + \\
& \quad 4 M \theta \omega \cos[2 \alpha] \cos[\alpha - t \omega] \sec[\alpha]^2 \sin[\alpha - t \omega] + 2 M \theta \omega \sin[2 \alpha + 2 t \omega] + \\
& \quad \left. \left(\sqrt{2} \left(-2 M \theta^2 \omega \cos[t \omega] \left(-6 - 2 \cos[2 \alpha] + 2 \cos[2 t \omega] - \cos[2 \alpha - 2 t \omega] - \right. \right. \right. \right. \\
& \quad \left. \left. \cos[2 \alpha + 2 t \omega] \right) \sin[\alpha]^2 \sin[t \omega] - M \theta^2 \sin[\alpha]^2 \sin[t \omega]^2 \right. \\
& \quad \left. \left. \left(-4 \omega \sin[2 t \omega] - 2 \omega \sin[2 \alpha - 2 t \omega] + 2 \omega \sin[2 \alpha + 2 t \omega] \right) \right) \right) \right) / \\
& \left(\sqrt{-M \theta^2 \left(-6 - 2 \cos[2 \alpha] + 2 \cos[2 t \omega] - \cos[2 \alpha - 2 t \omega] - \right. \right. \\
& \quad \left. \left. \cos[2 \alpha + 2 t \omega] \right) \sin[\alpha]^2 \sin[t \omega]^2} \right) \Bigg) / \\
& \left(32 M \theta \left(1 + \cos[2 \alpha] \right) \sqrt{M \theta^2 \left(6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \right. \right. \\
& \quad \left. \left. \cos[2 \alpha + 2 t \omega] \right) \sin[\alpha]^2 \sin[t \omega]^2} \right) \Bigg) \Bigg) + \\
& \frac{1}{M \theta} 2 i \sec[\alpha] \sin[t \omega]^2 \tan[\alpha] \left(e^{i \theta} r + \left(\left(-4 M \theta + 2 M \theta \cos[2 t \omega] - M \theta \cos[2 \alpha - 2 t \omega] - \right. \right. \right. \\
& \quad M \theta \cos[2 \alpha + 2 t \omega] + 2 M \theta \cos[\alpha - t \omega]^2 \sec[\alpha]^2 + \\
& \quad 2 M \theta \cos[2 \alpha] \cos[\alpha - t \omega]^2 \sec[\alpha]^2 + 2 M \theta \sec[\alpha]^2 \sin[t \omega]^2 + \\
& \quad 2 M \theta \cos[2 \alpha] \sec[\alpha]^2 \sin[t \omega]^2 + 2 \sqrt{2} \sqrt{-M \theta^2 \left(-6 - 2 \cos[2 \alpha] + \right. \right. \\
& \quad \left. \left. 2 \cos[2 t \omega] - \cos[2 \alpha - 2 t \omega] - \cos[2 \alpha + 2 t \omega] \right) \sin[\alpha]^2 \sin[t \omega]^2} \right) \right) \\
& \sqrt{\left(\frac{1}{1 + \cos[2 \alpha]} \left(-2 + 4 M \theta - 2 \cos[2 \alpha] - 2 M \theta \cos[2 t \omega] + M \theta \cos[2 \alpha - 2 t \omega] + \right. \right. \\
& \quad \left. \left. M \theta \cos[2 \alpha + 2 t \omega] - 2 \sqrt{2} \sqrt{M \theta^2 \left(6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \right. \right. \right. \right. \\
& \quad \left. \left. \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega] \right) \sin[\alpha]^2 \sin[t \omega]^2} \right) \right) \Bigg) \Bigg) /
\end{aligned}$$

$$\begin{aligned}
& \left(8 \sqrt{\left(M\theta^2 \left(6 + 2 \cos[2\alpha] - 2 \cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega] \right) \right.} \right. \\
& \quad \left. \left. \sin[\alpha]^2 \sin[t\omega]^2 \right) \right) + \\
& \left(\left(4 M\theta - 2 M\theta \cos[2t\omega] + M\theta \cos[2\alpha - 2t\omega] + M\theta \cos[2\alpha + 2t\omega] - \right. \right. \\
& \quad 2 M\theta \cos[\alpha - t\omega]^2 \sec[\alpha]^2 - 2 M\theta \cos[2\alpha] \cos[\alpha - t\omega]^2 \sec[\alpha]^2 - \\
& \quad 2 M\theta \sec[\alpha]^2 \sin[t\omega]^2 - 2 M\theta \cos[2\alpha] \sec[\alpha]^2 \sin[t\omega]^2 + \\
& \quad 2 \sqrt{2} \sqrt{\left(-M\theta^2 \left(-6 - 2 \cos[2\alpha] + 2 \cos[2t\omega] - \right. \right.} \\
& \quad \left. \left. \cos[2\alpha - 2t\omega] - \cos[2\alpha + 2t\omega] \right) \sin[\alpha]^2 \sin[t\omega]^2 \right) \left. \right) \Bigg) \Bigg) / \\
& \sqrt{\left(\frac{1}{1 + \cos[2\alpha]} \left(-2 + 4 M\theta - 2 \cos[2\alpha] - 2 M\theta \cos[2t\omega] + M\theta \cos[2\alpha - 2t\omega] + \right. \right.} \\
& \quad \left. \left. M\theta \cos[2\alpha + 2t\omega] + 2 \sqrt{2} \sqrt{\left(M\theta^2 \left(6 + 2 \cos[2\alpha] - 2 \cos[2t\omega] + \right. \right.} \right. \right. \\
& \quad \left. \left. \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega] \right) \sin[\alpha]^2 \sin[t\omega]^2 \right) \right) \Bigg) \Bigg) / \\
& \left(8 \sqrt{\left(M\theta^2 \left(6 + 2 \cos[2\alpha] - 2 \cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega] \right) \right.} \right. \\
& \quad \left. \left. \sin[\alpha]^2 \sin[t\omega]^2 \right) \right) \Bigg) \\
& \left(e^{i\theta} r \left(\left(\left(-4 M\theta + 2 M\theta \cos[2t\omega] - M\theta \cos[2\alpha - 2t\omega] - M\theta \cos[2\alpha + 2t\omega] + \right. \right. \right. \right. \\
& \quad 2 M\theta \cos[\alpha - t\omega]^2 \sec[\alpha]^2 + 2 M\theta \cos[2\alpha] \cos[\alpha - t\omega]^2 \sec[\alpha]^2 + \\
& \quad 2 M\theta \sec[\alpha]^2 \sin[t\omega]^2 + 2 M\theta \cos[2\alpha] \sec[\alpha]^2 \sin[t\omega]^2 + \\
& \quad 2 \sqrt{2} \sqrt{\left(-M\theta^2 \left(-6 - 2 \cos[2\alpha] + 2 \cos[2t\omega] - \right. \right.} \\
& \quad \left. \left. \cos[2\alpha - 2t\omega] - \cos[2\alpha + 2t\omega] \right) \sin[\alpha]^2 \sin[t\omega]^2 \right) \left. \right) \Bigg) \Bigg) / \\
& \sqrt{\left(\frac{1}{1 + \cos[2\alpha]} \left(-2 + 4 M\theta - 2 \cos[2\alpha] - 2 M\theta \cos[2t\omega] + M\theta \cos[2\alpha - 2t\omega] + \right. \right.} \\
& \quad \left. \left. M\theta \cos[2\alpha + 2t\omega] - 2 \sqrt{2} \sqrt{\left(M\theta^2 \left(6 + 2 \cos[2\alpha] - 2 \cos[2t\omega] + \right. \right.} \right. \right. \\
& \quad \left. \left. \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega] \right) \sin[\alpha]^2 \sin[t\omega]^2 \right) \right) \Bigg) \Bigg) / \\
& \left(8 \sqrt{\left(M\theta^2 \left(6 + 2 \cos[2\alpha] - 2 \cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega] \right) \right.} \right. \\
& \quad \left. \left. \sin[\alpha]^2 \sin[t\omega]^2 \right) \right) + \\
& \left(\left(4 M\theta - 2 M\theta \cos[2t\omega] + M\theta \cos[2\alpha - 2t\omega] + M\theta \cos[2\alpha + 2t\omega] - \right. \right. \\
& \quad 2 M\theta \cos[\alpha - t\omega]^2 \sec[\alpha]^2 - 2 M\theta \cos[2\alpha] \cos[\alpha - t\omega]^2 \sec[\alpha]^2 - \\
& \quad 2 M\theta \sec[\alpha]^2 \sin[t\omega]^2 - 2 M\theta \cos[2\alpha] \sec[\alpha]^2 \sin[t\omega]^2 + \\
& \quad 2 \sqrt{2} \sqrt{\left(-M\theta^2 \left(-6 - 2 \cos[2\alpha] + 2 \cos[2t\omega] - \right. \right.} \\
& \quad \left. \left. \cos[2\alpha - 2t\omega] - \cos[2\alpha + 2t\omega] \right) \sin[\alpha]^2 \sin[t\omega]^2 \right) \left. \right) \Bigg) \Bigg) / \\
& \sqrt{\left(\frac{1}{1 + \cos[2\alpha]} \left(-2 + 4 M\theta - 2 \cos[2\alpha] - 2 M\theta \cos[2t\omega] + M\theta \cos[2\alpha - 2t\omega] + \right. \right.} \\
& \quad \left. \left. M\theta \cos[2\alpha + 2t\omega] + 2 \sqrt{2} \sqrt{\left(M\theta^2 \left(6 + 2 \cos[2\alpha] - 2 \cos[2t\omega] + \right. \right.} \right. \right. \\
& \quad \left. \left. \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega] \right) \sin[\alpha]^2 \sin[t\omega]^2 \right) \right) \Bigg) \Bigg) / \\
& \left(8 \sqrt{\left(M\theta^2 \left(6 + 2 \cos[2\alpha] - 2 \cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega] \right) \right.} \right. \\
& \quad \left. \left. \sin[\alpha]^2 \sin[t\omega]^2 \right) \right) \Bigg) +
\end{aligned}$$

$$\begin{aligned}
& s \left(\left(i \cos[\alpha] \cot[\alpha] \csc[t \omega]^2 \left(-4 M0 + 2 M0 \cos[2 t \omega] - M0 \cos[2 \alpha - 2 t \omega] - \right. \right. \right. \\
& \quad M0 \cos[2 \alpha + 2 t \omega] + 2 M0 \cos[\alpha - t \omega]^2 \sec[\alpha]^2 + \\
& \quad 2 M0 \cos[2 \alpha] \cos[\alpha - t \omega]^2 \sec[\alpha]^2 + 2 M0 \sec[\alpha]^2 \sin[t \omega]^2 + \\
& \quad 2 M0 \cos[2 \alpha] \sec[\alpha]^2 \sin[t \omega]^2 + 2 \sqrt{2} \sqrt{-M0^2 (-6 - 2 \cos[2 \alpha] + \\
& \quad 2 \cos[2 t \omega] - \cos[2 \alpha - 2 t \omega] - \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega]^2} \left. \right) \right) \\
& \sqrt{\left(\frac{1}{1 + \cos[2 \alpha]} \left(-2 + 4 M0 - 2 \cos[2 \alpha] - 2 M0 \cos[2 t \omega] + M0 \cos[2 \alpha - 2 t \omega] + \right. \right. \\
& \quad M0 \cos[2 \alpha + 2 t \omega] - 2 \sqrt{2} \sqrt{M0^2 (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \\
& \quad \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega]^2} \left. \right) \right)} \\
& \left(4 M0 - 2 M0 \cos[2 t \omega] + M0 \cos[2 \alpha - 2 t \omega] + M0 \cos[2 \alpha + 2 t \omega] - \right. \\
& \quad 2 M0 \cos[\alpha - t \omega]^2 \sec[\alpha]^2 - 2 M0 \cos[2 \alpha] \cos[\alpha - t \omega]^2 \sec[\alpha]^2 - \\
& \quad 2 M0 \sec[\alpha]^2 \sin[t \omega]^2 - 2 M0 \cos[2 \alpha] \sec[\alpha]^2 \sin[t \omega]^2 + \\
& \quad 2 \sqrt{2} \sqrt{M0^2 (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \\
& \quad \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega]^2} \left. \right) \Big/ \\
& \left(32 M0 (1 + \cos[2 \alpha]) \sqrt{M0^2 (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \right. \\
& \quad \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega]^2} \left. \right) - \\
& \left(i \cos[\alpha] \cot[\alpha] \csc[t \omega]^2 \left(4 M0 - 2 M0 \cos[2 t \omega] + M0 \cos[2 \alpha - 2 t \omega] + \right. \right. \\
& \quad M0 \cos[2 \alpha + 2 t \omega] - 2 M0 \cos[\alpha - t \omega]^2 \sec[\alpha]^2 - \\
& \quad 2 M0 \cos[2 \alpha] \cos[\alpha - t \omega]^2 \sec[\alpha]^2 - 2 M0 \sec[\alpha]^2 \sin[t \omega]^2 - \\
& \quad 2 M0 \cos[2 \alpha] \sec[\alpha]^2 \sin[t \omega]^2 + 2 \sqrt{2} \sqrt{-M0^2 (-6 - 2 \cos[2 \alpha] + \\
& \quad 2 \cos[2 t \omega] - \cos[2 \alpha - 2 t \omega] - \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega]^2} \left. \right) \right) \\
& \sqrt{\left(\frac{1}{1 + \cos[2 \alpha]} \left(-2 + 4 M0 - 2 \cos[2 \alpha] - 2 M0 \cos[2 t \omega] + M0 \cos[2 \alpha - 2 t \omega] + \right. \right. \\
& \quad M0 \cos[2 \alpha + 2 t \omega] + 2 \sqrt{2} \sqrt{M0^2 (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \\
& \quad \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega]^2} \left. \right) \right)} \\
& \left(-4 M0 + 2 M0 \cos[2 t \omega] - M0 \cos[2 \alpha - 2 t \omega] - M0 \cos[2 \alpha + 2 t \omega] + \right. \\
& \quad 2 M0 \cos[\alpha - t \omega]^2 \sec[\alpha]^2 + 2 M0 \cos[2 \alpha] \cos[\alpha - t \omega]^2 \sec[\alpha]^2 + \\
& \quad 2 M0 \sec[\alpha]^2 \sin[t \omega]^2 + 2 M0 \cos[2 \alpha] \sec[\alpha]^2 \sin[t \omega]^2 + \\
& \quad 2 \sqrt{2} \sqrt{M0^2 (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \\
& \quad \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega]^2} \left. \right) \Big/ \\
& \left(32 M0 (1 + \cos[2 \alpha]) \sqrt{M0^2 (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \right. \\
& \quad \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega]^2} \left. \right) \Big) \Big) + \\
& \left(s \left(\left(\left(-4 M0 + 2 M0 \cos[2 t \omega] - M0 \cos[2 \alpha - 2 t \omega] - M0 \cos[2 \alpha + 2 t \omega] + 2 M0 \cos[\alpha - t \omega]^2 \right. \right. \right. \\
& \quad \sec[\alpha]^2 + 2 M0 \cos[2 \alpha] \cos[\alpha - t \omega]^2 \sec[\alpha]^2 + 2 M0 \sec[\alpha]^2 \sin[t \omega]^2 + \\
& \quad 2 M0 \cos[2 \alpha] \sec[\alpha]^2 \sin[t \omega]^2 + 2 \sqrt{2} \sqrt{-M0^2 (-6 - 2 \cos[2 \alpha] + \\
& \quad 2 \cos[2 t \omega] - \cos[2 \alpha - 2 t \omega] - \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega]^2} \left. \right) \right) \right)
\end{aligned}$$

$$\begin{aligned}
& \sqrt{\left(\frac{1}{1 + \cos[2\alpha]} \left(-2 + 4M\theta - 2\cos[2\alpha] - 2M\theta\cos[2t\omega] + M\theta\cos[2\alpha - 2t\omega] + \right. \right. \\
& \quad \left. \left. M\theta\cos[2\alpha + 2t\omega] - 2\sqrt{2} \sqrt{M\theta^2(6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \right. \right. \\
& \quad \left. \left. \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2} \right) \right) \Bigg/} \\
& \left(8\sqrt{M\theta^2(6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2} \right) + \\
& \left(\left(4M\theta - 2M\theta\cos[2t\omega] + M\theta\cos[2\alpha - 2t\omega] + M\theta\cos[2\alpha + 2t\omega] - \right. \right. \\
& \quad 2M\theta\cos[\alpha - t\omega]^2 \sec[\alpha]^2 - 2M\theta\cos[2\alpha]\cos[\alpha - t\omega]^2 \sec[\alpha]^2 - \\
& \quad 2M\theta\sec[\alpha]^2 \sin[t\omega]^2 - 2M\theta\cos[2\alpha]\sec[\alpha]^2 \sin[t\omega]^2 + \\
& \quad \left. 2\sqrt{2} \sqrt{-M\theta^2(-6 - 2\cos[2\alpha] + 2\cos[2t\omega] - \right. \\
& \quad \left. \cos[2\alpha - 2t\omega] - \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2} \right) \Bigg/ \\
& \sqrt{\left(\frac{1}{1 + \cos[2\alpha]} \left(-2 + 4M\theta - 2\cos[2\alpha] - 2M\theta\cos[2t\omega] + M\theta\cos[2\alpha - 2t\omega] + \right. \right. \\
& \quad \left. \left. M\theta\cos[2\alpha + 2t\omega] + 2\sqrt{2} \sqrt{M\theta^2(6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \right. \right. \\
& \quad \left. \left. \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2} \right) \right) \Bigg/} \\
& \left(8\sqrt{M\theta^2(6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2} \right) \Bigg) + \\
& e^{-i\theta} r \left(\left(i\cos[\alpha]\cot[\alpha]\csc[t\omega]^2 \left(-4M\theta + 2M\theta\cos[2t\omega] - M\theta\cos[2\alpha - 2t\omega] - \right. \right. \right. \\
& \quad M\theta\cos[2\alpha + 2t\omega] + 2M\theta\cos[\alpha - t\omega]^2 \sec[\alpha]^2 + \\
& \quad 2M\theta\cos[2\alpha]\cos[\alpha - t\omega]^2 \sec[\alpha]^2 + 2M\theta\sec[\alpha]^2 \sin[t\omega]^2 + \\
& \quad 2M\theta\cos[2\alpha]\sec[\alpha]^2 \sin[t\omega]^2 + 2\sqrt{2} \sqrt{-M\theta^2(-6 - 2\cos[2\alpha] + \\
& \quad \left. 2\cos[2t\omega] - \cos[2\alpha - 2t\omega] - \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2} \right) \Bigg) \\
& \sqrt{\left(\frac{1}{1 + \cos[2\alpha]} \left(-2 + 4M\theta - 2\cos[2\alpha] - 2M\theta\cos[2t\omega] + M\theta\cos[2\alpha - 2t\omega] + \right. \right. \\
& \quad \left. \left. M\theta\cos[2\alpha + 2t\omega] - 2\sqrt{2} \sqrt{M\theta^2(6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \right. \right. \\
& \quad \left. \left. \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2} \right) \right) \Bigg/} \\
& \left(4M\theta - 2M\theta\cos[2t\omega] + M\theta\cos[2\alpha - 2t\omega] + M\theta\cos[2\alpha + 2t\omega] - \right. \\
& \quad 2M\theta\cos[\alpha - t\omega]^2 \sec[\alpha]^2 - 2M\theta\cos[2\alpha]\cos[\alpha - t\omega]^2 \sec[\alpha]^2 - \\
& \quad 2M\theta\sec[\alpha]^2 \sin[t\omega]^2 - 2M\theta\cos[2\alpha]\sec[\alpha]^2 \sin[t\omega]^2 + \\
& \quad \left. 2\sqrt{2} \sqrt{M\theta^2(6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \right. \\
& \quad \left. \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2} \right) \Bigg) \Bigg/ \\
& \left(32M\theta(1 + \cos[2\alpha]) \sqrt{M\theta^2(6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \right. \\
& \quad \left. \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2} \right) - \\
& \left(i\cos[\alpha]\cot[\alpha]\csc[t\omega]^2 \left(4M\theta - 2M\theta\cos[2t\omega] + M\theta\cos[2\alpha - 2t\omega] + \right. \right. \\
& \quad M\theta\cos[2\alpha + 2t\omega] - 2M\theta\cos[\alpha - t\omega]^2 \sec[\alpha]^2 - \\
& \quad \left. 2M\theta\cos[2\alpha]\cos[\alpha - t\omega]^2 \sec[\alpha]^2 - 2M\theta\sec[\alpha]^2 \sin[t\omega]^2 - \right.
\end{aligned}$$

$$\begin{aligned}
& 2 M \theta \cos [2 \alpha] \sec [\alpha]^2 \sin [t \omega]^2 + 2 \sqrt{2} \sqrt{\left(-M \theta^2 (-6 - 2 \cos [2 \alpha] + \right. \\
& \quad \left. 2 \cos [2 t \omega] - \cos [2 \alpha - 2 t \omega] - \cos [2 \alpha + 2 t \omega]) \sin [\alpha]^2 \sin [t \omega]^2\right)} \\
& \sqrt{\left(\frac{1}{1 + \cos [2 \alpha]} \left(-2 + 4 M \theta - 2 \cos [2 \alpha] - 2 M \theta \cos [2 t \omega] + M \theta \cos [2 \alpha - 2 t \omega] + \right. \right. \\
& \quad \left. M \theta \cos [2 \alpha + 2 t \omega] + 2 \sqrt{2} \sqrt{\left(M \theta^2 (6 + 2 \cos [2 \alpha] - 2 \cos [2 t \omega] + \right. \right. \\
& \quad \left. \left. \cos [2 \alpha - 2 t \omega] + \cos [2 \alpha + 2 t \omega]) \sin [\alpha]^2 \sin [t \omega]^2\right)}\right) \left. \right)} \\
& \left(-4 M \theta + 2 M \theta \cos [2 t \omega] - M \theta \cos [2 \alpha - 2 t \omega] - M \theta \cos [2 \alpha + 2 t \omega] + \right. \\
& \quad 2 M \theta \cos [\alpha - t \omega]^2 \sec [\alpha]^2 + 2 M \theta \cos [2 \alpha] \cos [\alpha - t \omega]^2 \sec [\alpha]^2 + \\
& \quad 2 M \theta \sec [\alpha]^2 \sin [t \omega]^2 + 2 M \theta \cos [2 \alpha] \sec [\alpha]^2 \sin [t \omega]^2 + \\
& \quad \left. 2 \sqrt{2} \sqrt{\left(M \theta^2 (6 + 2 \cos [2 \alpha] - 2 \cos [2 t \omega] + \cos [2 \alpha - 2 t \omega] + \right. \right. \\
& \quad \left. \left. \cos [2 \alpha + 2 t \omega]) \sin [\alpha]^2 \sin [t \omega]^2\right)}\right) \left. \right) / \\
& \left(32 M \theta (1 + \cos [2 \alpha]) \sqrt{\left(M \theta^2 (6 + 2 \cos [2 \alpha] - 2 \cos [2 t \omega] + \cos [2 \alpha - 2 t \omega] + \right. \right. \\
& \quad \left. \left. \cos [2 \alpha + 2 t \omega]) \sin [\alpha]^2 \sin [t \omega]^2\right)}\right) \left. \right) \\
& \left(-\left(\left(\frac{1}{2} M \theta (1 + \cos [2 \alpha]) \sec [\alpha] \sin [t \omega]^2 \sqrt{\left(\frac{1}{1 + \cos [2 \alpha]} \left(-2 + 4 M \theta - 2 \cos [2 \alpha] - \right. \right. \right. \right. \right. \\
& \quad \left. 2 M \theta \cos [2 t \omega] + M \theta \cos [2 \alpha - 2 t \omega] + M \theta \cos [2 \alpha + 2 t \omega] - \right. \\
& \quad \left. 2 \sqrt{2} \sqrt{\left(M \theta^2 (6 + 2 \cos [2 \alpha] - 2 \cos [2 t \omega] + \cos [2 \alpha - 2 t \omega] + \right. \right. \\
& \quad \left. \left. \cos [2 \alpha + 2 t \omega]) \sin [\alpha]^2 \sin [t \omega]^2\right)}\right) \left. \right) \tan [\alpha] \left. \right) / \\
& \left(2 \sqrt{\left(M \theta^2 (6 + 2 \cos [2 \alpha] - 2 \cos [2 t \omega] + \cos [2 \alpha - 2 t \omega] + \cos [2 \alpha + 2 t \omega]) \right. \right. \\
& \quad \left. \left. \sin [\alpha]^2 \sin [t \omega]^2\right)}\right) \left. \right) + \\
& \left(\frac{1}{2} M \theta (1 + \cos [2 \alpha]) \sec [\alpha] \sin [t \omega]^2 \sqrt{\left(\frac{1}{1 + \cos [2 \alpha]} \left(-2 + 4 M \theta - 2 \cos [2 \alpha] - \right. \right. \right. \right. \right. \\
& \quad \left. 2 M \theta \cos [2 t \omega] + M \theta \cos [2 \alpha - 2 t \omega] + M \theta \cos [2 \alpha + 2 t \omega] + \right. \\
& \quad \left. 2 \sqrt{2} \sqrt{\left(M \theta^2 (6 + 2 \cos [2 \alpha] - 2 \cos [2 t \omega] + \cos [2 \alpha - 2 t \omega] + \right. \right. \\
& \quad \left. \left. \cos [2 \alpha + 2 t \omega]) \sin [\alpha]^2 \sin [t \omega]^2\right)}\right) \left. \right) \tan [\alpha] \left. \right) / \\
& \left(2 \sqrt{\left(M \theta^2 (6 + 2 \cos [2 \alpha] - 2 \cos [2 t \omega] + \cos [2 \alpha - 2 t \omega] + \cos [2 \alpha + 2 t \omega]) \right. \right. \\
& \quad \left. \left. \sin [\alpha]^2 \sin [t \omega]^2\right)}\right) \left. \right) + \\
& \frac{1}{2} \left(\left(\left(\left(-4 M \theta + 2 M \theta \cos [2 t \omega] - M \theta \cos [2 \alpha - 2 t \omega] - M \theta \cos [2 \alpha + 2 t \omega] + 2 M \theta \cos [\alpha - t \omega]^2 \right. \right. \right. \right. \\
& \quad \left. \sec [\alpha]^2 + 2 M \theta \cos [2 \alpha] \cos [\alpha - t \omega]^2 \sec [\alpha]^2 + 2 M \theta \sec [\alpha]^2 \sin [t \omega]^2 + \right. \\
& \quad \left. 2 M \theta \cos [2 \alpha] \sec [\alpha]^2 \sin [t \omega]^2 + 2 \sqrt{2} \sqrt{\left(-M \theta^2 (-6 - 2 \cos [2 \alpha] + \right. \right. \\
& \quad \left. \left. 2 \cos [2 t \omega] - \cos [2 \alpha - 2 t \omega] - \cos [2 \alpha + 2 t \omega]) \sin [\alpha]^2 \sin [t \omega]^2\right)} \right. \\
& \quad \left. \sqrt{\left(\frac{1}{1 + \cos [2 \alpha]} \left(-2 + 4 M \theta - 2 \cos [2 \alpha] - 2 M \theta \cos [2 t \omega] + M \theta \cos [2 \alpha - 2 t \omega] + \right. \right. \right. \\
& \quad \left. \left. M \theta \cos [2 \alpha + 2 t \omega] - 2 \sqrt{2} \sqrt{\left(M \theta^2 (6 + 2 \cos [2 \alpha] - 2 \cos [2 t \omega] + \right. \right. \right. \right. \right.
\end{aligned}$$

$$\begin{aligned}
& \left. \left(\cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega] \right) \sin[\alpha]^2 \sin[t\omega]^2 \right) \Bigg) \Bigg) / \\
& \left(8 \sqrt{M\theta^2 (6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega])} \right. \\
& \quad \left. \sin[\alpha]^2 \sin[t\omega]^2 \right) + \\
& \left(\left(4M\theta - 2M\theta \cos[2t\omega] + M\theta \cos[2\alpha - 2t\omega] + M\theta \cos[2\alpha + 2t\omega] - \right. \right. \\
& \quad 2M\theta \cos[\alpha - t\omega]^2 \sec[\alpha]^2 - 2M\theta \cos[2\alpha] \cos[\alpha - t\omega]^2 \sec[\alpha]^2 - \\
& \quad 2M\theta \sec[\alpha]^2 \sin[t\omega]^2 - 2M\theta \cos[2\alpha] \sec[\alpha]^2 \sin[t\omega]^2 + \\
& \quad 2\sqrt{2} \sqrt{(-M\theta^2 (-6 - 2\cos[2\alpha] + 2\cos[2t\omega] - \\
& \quad \cos[2\alpha - 2t\omega] - \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2)} \Bigg) \\
& \quad \sqrt{\left(\frac{1}{1 + \cos[2\alpha]} (-2 + 4M\theta - 2\cos[2\alpha] - 2M\theta \cos[2t\omega] + M\theta \cos[2\alpha - 2t\omega] + \right.} \\
& \quad \left. M\theta \cos[2\alpha + 2t\omega] + 2\sqrt{2} \sqrt{M\theta^2 (6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \right.} \\
& \quad \left. \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2 \right) \Bigg) \Bigg) / \\
& \left(8 \sqrt{M\theta^2 (6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega])} \right. \\
& \quad \left. \sin[\alpha]^2 \sin[t\omega]^2 \right) \Bigg) \\
& \left(- \left(\left(-4M\theta + 2M\theta \cos[2t\omega] - M\theta \cos[2\alpha - 2t\omega] - M\theta \cos[2\alpha + 2t\omega] + \right. \right. \right. \\
& \quad 2M\theta \cos[\alpha - t\omega]^2 \sec[\alpha]^2 + 2M\theta \cos[2\alpha] \cos[\alpha - t\omega]^2 \sec[\alpha]^2 + 2M\theta \sec[\alpha]^2 \\
& \quad \sin[t\omega]^2 + 2M\theta \cos[2\alpha] \sec[\alpha]^2 \sin[t\omega]^2 + 2\sqrt{2} \sqrt{(-M\theta^2 (-6 - 2\cos[2\alpha] + \\
& \quad 2\cos[2t\omega] - \cos[2\alpha - 2t\omega] - \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2)} \Bigg) \\
& \quad \sqrt{\left(\frac{1}{1 + \cos[2\alpha]} (-2 + 4M\theta - 2\cos[2\alpha] - 2M\theta \cos[2t\omega] + M\theta \cos[2\alpha - 2t\omega] + \right.} \\
& \quad \left. M\theta \cos[2\alpha + 2t\omega] - 2\sqrt{2} \sqrt{M\theta^2 (6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \right.} \\
& \quad \left. \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2 \right) \Bigg) \\
& \quad \left(2M\theta^2 \omega \cos[t\omega] (6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \right. \\
& \quad \left. \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega] + M\theta^2 \sin[\alpha]^2 \sin[t\omega]^2 \right. \\
& \quad \left. (4\omega \sin[2t\omega] + 2\omega \sin[2\alpha - 2t\omega] - 2\omega \sin[2\alpha + 2t\omega]) \right) \Bigg) / \\
& \left(16 (M\theta^2 (6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega]) \right. \\
& \quad \left. \sin[\alpha]^2 \sin[t\omega]^2)^{3/2} \right) \Bigg) - \\
& \left(\left(4M\theta - 2M\theta \cos[2t\omega] + M\theta \cos[2\alpha - 2t\omega] + M\theta \cos[2\alpha + 2t\omega] - \right. \right. \\
& \quad 2M\theta \cos[\alpha - t\omega]^2 \sec[\alpha]^2 - 2M\theta \cos[2\alpha] \cos[\alpha - t\omega]^2 \sec[\alpha]^2 - \\
& \quad 2M\theta \sec[\alpha]^2 \sin[t\omega]^2 - 2M\theta \cos[2\alpha] \sec[\alpha]^2 \sin[t\omega]^2 + \\
& \quad 2\sqrt{2} \sqrt{(-M\theta^2 (-6 - 2\cos[2\alpha] + 2\cos[2t\omega] - \\
& \quad \cos[2\alpha - 2t\omega] - \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2)} \Bigg) \\
& \quad \sqrt{\left(\frac{1}{1 + \cos[2\alpha]} (-2 + 4M\theta - 2\cos[2\alpha] - 2M\theta \cos[2t\omega] + M\theta \cos[2\alpha - 2t\omega] + \right.}
\end{aligned}$$

$$\begin{aligned}
& M0 \cos[2\alpha + 2t\omega] + 2\sqrt{2} \sqrt{M0^2 (6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \\
& \quad \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2} \Big) \\
& \left(2M0^2 \omega \cos[t\omega] (6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \right. \\
& \quad \left. \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega] + M0^2 \sin[\alpha]^2 \sin[t\omega]^2 \right. \\
& \quad \left. (4\omega \sin[2t\omega] + 2\omega \sin[2\alpha - 2t\omega] - 2\omega \sin[2\alpha + 2t\omega]) \right) \Big) / \\
& \left(16 (M0^2 (6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega]) \right. \\
& \quad \left. \sin[\alpha]^2 \sin[t\omega]^2)^{3/2} \right) + \\
& \left((-4M0 + 2M0 \cos[2t\omega] - M0 \cos[2\alpha - 2t\omega] - M0 \cos[2\alpha + 2t\omega] + \right. \\
& \quad 2M0 \cos[\alpha - t\omega]^2 \sec[\alpha]^2 + 2M0 \cos[2\alpha] \cos[\alpha - t\omega]^2 \sec[\alpha]^2 + \\
& \quad 2M0 \sec[\alpha]^2 \sin[t\omega]^2 + 2M0 \cos[2\alpha] \sec[\alpha]^2 \sin[t\omega]^2 + \\
& \quad 2\sqrt{2} \sqrt{-M0^2 (-6 - 2\cos[2\alpha] + 2\cos[2t\omega] - \\
& \quad \cos[2\alpha - 2t\omega] - \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2} \Big) \\
& \quad (4M0 \omega \sin[2t\omega] + 2M0 \omega \sin[2\alpha - 2t\omega] - 2M0 \omega \sin[2\alpha + 2t\omega] - \\
& \quad (\sqrt{2} (2M0^2 \omega \cos[t\omega] (6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \\
& \quad \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega] + M0^2 \sin[\alpha]^2 \sin[t\omega]^2 \\
& \quad (4\omega \sin[2t\omega] + 2\omega \sin[2\alpha - 2t\omega] - 2\omega \sin[2\alpha + 2t\omega])) \Big) \Big) / \\
& \quad (\sqrt{M0^2 (6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \\
& \quad \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2} \Big) \Big) \Big) / \\
& \left(16 (1 + \cos[2\alpha]) \sqrt{M0^2 (6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \right. \\
& \quad \left. \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2} \right) \\
& \sqrt{\left(\frac{1}{1 + \cos[2\alpha]} (-2 + 4M0 - 2\cos[2\alpha] - 2M0 \cos[2t\omega] + M0 \cos[2\alpha - 2t\omega] + \right. \\
& \quad M0 \cos[2\alpha + 2t\omega] - 2\sqrt{2} \sqrt{M0^2 (6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \\
& \quad \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2} \Big) \Big) \Big) + \\
& \left((4M0 - 2M0 \cos[2t\omega] + M0 \cos[2\alpha - 2t\omega] + M0 \cos[2\alpha + 2t\omega] - 2M0 \right. \\
& \quad \cos[\alpha - t\omega]^2 \sec[\alpha]^2 - 2M0 \cos[2\alpha] \cos[\alpha - t\omega]^2 \sec[\alpha]^2 - \\
& \quad 2M0 \sec[\alpha]^2 \sin[t\omega]^2 - 2M0 \cos[2\alpha] \sec[\alpha]^2 \sin[t\omega]^2 + \\
& \quad 2\sqrt{2} \sqrt{-M0^2 (-6 - 2\cos[2\alpha] + 2\cos[2t\omega] - \\
& \quad \cos[2\alpha - 2t\omega] - \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2} \Big) \\
& \quad (4M0 \omega \sin[2t\omega] + 2M0 \omega \sin[2\alpha - 2t\omega] - 2M0 \omega \sin[2\alpha + 2t\omega] + \\
& \quad (\sqrt{2} (2M0^2 \omega \cos[t\omega] (6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \\
& \quad \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega] + M0^2 \sin[\alpha]^2 \sin[t\omega]^2 \\
& \quad (4\omega \sin[2t\omega] + 2\omega \sin[2\alpha - 2t\omega] - 2\omega \sin[2\alpha + 2t\omega])) \Big) \Big) / \\
& \quad (\sqrt{M0^2 (6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \\
& \quad \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2} \Big) \Big) \Big) \Big) / \\
& \left(16 (1 + \cos[2\alpha]) \sqrt{M0^2 (6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \right.
\end{aligned}$$

$$\begin{aligned}
& \cos[2\alpha + 2t\omega] \sin[\alpha]^2 \sin[t\omega]^2) \\
& \sqrt{\left(\frac{1}{1 + \cos[2\alpha]} \left(-2 + 4M\theta - 2\cos[2\alpha] - 2M\theta \cos[2t\omega] + M\theta \cos[2\alpha - 2t\omega] + \right. \right. \\
& \quad \left. \left. M\theta \cos[2\alpha + 2t\omega] + 2\sqrt{2} \sqrt{M\theta^2 (6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \right. \right. \\
& \quad \left. \left. \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2) \right) \right) \Bigg) + \\
& \left(\sqrt{\left(\frac{1}{1 + \cos[2\alpha]} \left(-2 + 4M\theta - 2\cos[2\alpha] - 2M\theta \cos[2t\omega] + M\theta \cos[2\alpha - 2t\omega] + \right. \right. \right. \\
& \quad \left. \left. M\theta \cos[2\alpha + 2t\omega] + 2\sqrt{2} \sqrt{M\theta^2 (6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \right. \right. \\
& \quad \left. \left. \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2) \right) \right) \Bigg) \\
& \left(-4M\theta\omega \cos[t\omega] \sec[\alpha]^2 \sin[t\omega] - 4M\theta\omega \cos[2\alpha] \cos[t\omega] \sec[\alpha]^2 \right. \\
& \quad \sin[t\omega] + 4M\theta\omega \sin[2t\omega] + 2M\theta\omega \sin[2\alpha - 2t\omega] - \\
& \quad 4M\theta\omega \cos[\alpha - t\omega] \sec[\alpha]^2 \sin[\alpha - t\omega] - 4M\theta\omega \cos[2\alpha] \\
& \quad \cos[\alpha - t\omega] \sec[\alpha]^2 \sin[\alpha - t\omega] - 2M\theta\omega \sin[2\alpha + 2t\omega] + \\
& \quad \left(\sqrt{2} (-2M\theta^2\omega \cos[t\omega] (-6 - 2\cos[2\alpha] + 2\cos[2t\omega] - \cos[2\alpha - 2t\omega] - \right. \\
& \quad \left. \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega] - M\theta^2 \sin[\alpha]^2 \sin[t\omega]^2 \right. \\
& \quad \left. (-4\omega \sin[2t\omega] - 2\omega \sin[2\alpha - 2t\omega] + 2\omega \sin[2\alpha + 2t\omega]) \right) \Bigg) / \\
& \left(\sqrt{(-M\theta^2 (-6 - 2\cos[2\alpha] + 2\cos[2t\omega] - \cos[2\alpha - 2t\omega] - \right. \\
& \quad \left. \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2) \Bigg) \Bigg) / \\
& \left(8\sqrt{M\theta^2 (6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega]) \right. \right. \\
& \quad \left. \left. \sin[\alpha]^2 \sin[t\omega]^2) \right) + \right. \\
& \left(\sqrt{\left(\frac{1}{1 + \cos[2\alpha]} \left(-2 + 4M\theta - 2\cos[2\alpha] - 2M\theta \cos[2t\omega] + M\theta \cos[2\alpha - 2t\omega] + \right. \right. \right. \\
& \quad \left. \left. M\theta \cos[2\alpha + 2t\omega] - 2\sqrt{2} \sqrt{M\theta^2 (6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \right. \right. \\
& \quad \left. \left. \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2) \right) \right) \Bigg) \\
& \left(4M\theta\omega \cos[t\omega] \sec[\alpha]^2 \sin[t\omega] + 4M\theta\omega \cos[2\alpha] \cos[t\omega] \sec[\alpha]^2 \right. \\
& \quad \sin[t\omega] - 4M\theta\omega \sin[2t\omega] - 2M\theta\omega \sin[2\alpha - 2t\omega] + \\
& \quad 4M\theta\omega \cos[\alpha - t\omega] \sec[\alpha]^2 \sin[\alpha - t\omega] + 4M\theta\omega \cos[2\alpha] \\
& \quad \cos[\alpha - t\omega] \sec[\alpha]^2 \sin[\alpha - t\omega] + 2M\theta\omega \sin[2\alpha + 2t\omega] + \\
& \quad \left(\sqrt{2} (-2M\theta^2\omega \cos[t\omega] (-6 - 2\cos[2\alpha] + 2\cos[2t\omega] - \cos[2\alpha - 2t\omega] - \right. \\
& \quad \left. \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega] - M\theta^2 \sin[\alpha]^2 \sin[t\omega]^2 \right. \\
& \quad \left. (-4\omega \sin[2t\omega] - 2\omega \sin[2\alpha - 2t\omega] + 2\omega \sin[2\alpha + 2t\omega]) \right) \Bigg) / \\
& \left(\sqrt{(-M\theta^2 (-6 - 2\cos[2\alpha] + 2\cos[2t\omega] - \cos[2\alpha - 2t\omega] - \right. \\
& \quad \left. \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2) \Bigg) \Bigg) \Bigg) / \\
& \left(8\sqrt{M\theta^2 (6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega]) \right. \right. \\
& \quad \left. \left. \sin[\alpha]^2 \sin[t\omega]^2) \right) + \right. \\
& \left(- \left(\left(i\omega \cos[\alpha] \cot[\alpha] \cot[t\omega] \csc[t\omega]^2 \left(-4M\theta + 2M\theta \cos[2t\omega] - \right. \right. \right. \right.
\end{aligned}$$

$$\begin{aligned}
& M0 \cos[2\alpha - 2t\omega] - M0 \cos[2\alpha + 2t\omega] + 2M0 \cos[\alpha - t\omega]^2 \sec[\alpha]^2 + \\
& 2M0 \cos[2\alpha] \cos[\alpha - t\omega]^2 \sec[\alpha]^2 + 2M0 \sec[\alpha]^2 \sin[t\omega]^2 + \\
& 2M0 \cos[2\alpha] \sec[\alpha]^2 \sin[t\omega]^2 + 2\sqrt{2} \sqrt{-M0^2 (-6 - 2\cos[2\alpha] + \\
& 2\cos[2t\omega] - \cos[2\alpha - 2t\omega] - \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2}) \\
& \sqrt{\left(\frac{1}{1 + \cos[2\alpha]} \left(-2 + 4M0 - 2\cos[2\alpha] - 2M0 \cos[2t\omega] + M0 \cos[2\alpha - 2t\omega] + \right.\right. \\
& \quad M0 \cos[2\alpha + 2t\omega] - 2\sqrt{2} \sqrt{M0^2 (6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \\
& \quad \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2}) \left.\right)} \\
& \left(4M0 - 2M0 \cos[2t\omega] + M0 \cos[2\alpha - 2t\omega] + M0 \cos[2\alpha + 2t\omega] - \right. \\
& \quad 2M0 \cos[\alpha - t\omega]^2 \sec[\alpha]^2 - 2M0 \cos[2\alpha] \cos[\alpha - t\omega]^2 \sec[\alpha]^2 - \\
& \quad 2M0 \sec[\alpha]^2 \sin[t\omega]^2 - 2M0 \cos[2\alpha] \sec[\alpha]^2 \sin[t\omega]^2 + \\
& \quad 2\sqrt{2} \sqrt{M0^2 (6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega]) \\
& \quad \sin[\alpha]^2 \sin[t\omega]^2}) \left.\right) \Big/ (16M0 (1 + \cos[2\alpha]) \sqrt{M0^2 (6 + 2\cos[2\alpha] - \\
& \quad 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2}) \Big) + \\
& \left(i\omega \cos[\alpha] \cot[\alpha] \cot[t\omega] \csc[t\omega]^2 \left(4M0 - 2M0 \cos[2t\omega] + \right.\right. \\
& \quad M0 \cos[2\alpha - 2t\omega] + M0 \cos[2\alpha + 2t\omega] - 2M0 \cos[\alpha - t\omega]^2 \sec[\alpha]^2 - \\
& \quad 2M0 \cos[2\alpha] \cos[\alpha - t\omega]^2 \sec[\alpha]^2 - 2M0 \sec[\alpha]^2 \sin[t\omega]^2 - \\
& \quad 2M0 \cos[2\alpha] \sec[\alpha]^2 \sin[t\omega]^2 + 2\sqrt{2} \sqrt{-M0^2 (-6 - 2\cos[2\alpha] + \\
& \quad 2\cos[2t\omega] - \cos[2\alpha - 2t\omega] - \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2}) \left.\right) \\
& \sqrt{\left(\frac{1}{1 + \cos[2\alpha]} \left(-2 + 4M0 - 2\cos[2\alpha] - 2M0 \cos[2t\omega] + M0 \cos[2\alpha - 2t\omega] + \right.\right. \\
& \quad M0 \cos[2\alpha + 2t\omega] + 2\sqrt{2} \sqrt{M0^2 (6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \\
& \quad \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2}) \left.\right)} \\
& \left(-4M0 + 2M0 \cos[2t\omega] - M0 \cos[2\alpha - 2t\omega] - M0 \cos[2\alpha + 2t\omega] + \right. \\
& \quad 2M0 \cos[\alpha - t\omega]^2 \sec[\alpha]^2 + 2M0 \cos[2\alpha] \cos[\alpha - t\omega]^2 \sec[\alpha]^2 + \\
& \quad 2M0 \sec[\alpha]^2 \sin[t\omega]^2 + 2M0 \cos[2\alpha] \sec[\alpha]^2 \sin[t\omega]^2 + \\
& \quad 2\sqrt{2} \sqrt{M0^2 (6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \\
& \quad \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2}) \left.\right) \Big/ \\
& (16M0 (1 + \cos[2\alpha]) \sqrt{M0^2 (6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \\
& \quad \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2}) - \\
& \left(i\cos[\alpha] \cot[\alpha] \csc[t\omega]^2 \left(-4M0 + 2M0 \cos[2t\omega] - M0 \cos[2\alpha - 2t\omega] - \right.\right. \\
& \quad M0 \cos[2\alpha + 2t\omega] + 2M0 \cos[\alpha - t\omega]^2 \sec[\alpha]^2 + \\
& \quad 2M0 \cos[2\alpha] \cos[\alpha - t\omega]^2 \sec[\alpha]^2 + 2M0 \sec[\alpha]^2 \sin[t\omega]^2 + \\
& \quad 2M0 \cos[2\alpha] \sec[\alpha]^2 \sin[t\omega]^2 + 2\sqrt{2} \sqrt{-M0^2 (-6 - 2\cos[2\alpha] + \\
& \quad 2\cos[2t\omega] - \cos[2\alpha - 2t\omega] - \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2}) \left.\right) \\
& \sqrt{\left(\frac{1}{1 + \cos[2\alpha]} \left(-2 + 4M0 - 2\cos[2\alpha] - 2M0 \cos[2t\omega] + M0 \cos[2\alpha - 2t\omega] + \right.\right.
\end{aligned}$$

$$\begin{aligned}
& M\theta \cos[2\alpha + 2t\omega] - 2\sqrt{2} \sqrt{M\theta^2 (6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2} \Big) \\
& \Big(4M\theta - 2M\theta \cos[2t\omega] + M\theta \cos[2\alpha - 2t\omega] + M\theta \cos[2\alpha + 2t\omega] - \\
& 2M\theta \cos[\alpha - t\omega]^2 \sec[\alpha]^2 - 2M\theta \cos[2\alpha] \cos[\alpha - t\omega]^2 \sec[\alpha]^2 - \\
& 2M\theta \sec[\alpha]^2 \sin[t\omega]^2 - 2M\theta \cos[2\alpha] \sec[\alpha]^2 \sin[t\omega]^2 + \\
& 2\sqrt{2} \sqrt{M\theta^2 (6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2} \Big) (2M\theta^2 \omega \cos[t\omega] (6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \\
& \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega] + M\theta^2 \sin[\alpha]^2 \\
& \sin[t\omega]^2 (4\omega \sin[2t\omega] + 2\omega \sin[2\alpha - 2t\omega] - 2\omega \sin[2\alpha + 2t\omega])) \Big) / \\
& \Big(64M\theta (1 + \cos[2\alpha]) (M\theta^2 (6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \\
& \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2)^{3/2} \Big) + \\
& \Big(i \cos[\alpha] \cot[\alpha] \csc[t\omega]^2 (4M\theta - 2M\theta \cos[2t\omega] + M\theta \cos[2\alpha - 2t\omega] + \\
& M\theta \cos[2\alpha + 2t\omega] - 2M\theta \cos[\alpha - t\omega]^2 \sec[\alpha]^2 - \\
& 2M\theta \cos[2\alpha] \cos[\alpha - t\omega]^2 \sec[\alpha]^2 - 2M\theta \sec[\alpha]^2 \sin[t\omega]^2 - \\
& 2M\theta \cos[2\alpha] \sec[\alpha]^2 \sin[t\omega]^2 + 2\sqrt{2} \sqrt{-M\theta^2 (-6 - 2\cos[2\alpha] + \\
& 2\cos[2t\omega] - \cos[2\alpha - 2t\omega] - \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2} \Big) \\
& \sqrt{\Big(\frac{1}{1 + \cos[2\alpha]} (-2 + 4M\theta - 2\cos[2\alpha] - 2M\theta \cos[2t\omega] + M\theta \cos[2\alpha - 2t\omega] + \\
& M\theta \cos[2\alpha + 2t\omega] + 2\sqrt{2} \sqrt{M\theta^2 (6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2} \Big) \Big) \\
& \Big(-4M\theta + 2M\theta \cos[2t\omega] - M\theta \cos[2\alpha - 2t\omega] - M\theta \cos[2\alpha + 2t\omega] + \\
& 2M\theta \cos[\alpha - t\omega]^2 \sec[\alpha]^2 + 2M\theta \cos[2\alpha] \cos[\alpha - t\omega]^2 \sec[\alpha]^2 + \\
& 2M\theta \sec[\alpha]^2 \sin[t\omega]^2 + 2M\theta \cos[2\alpha] \sec[\alpha]^2 \sin[t\omega]^2 + \\
& 2\sqrt{2} \sqrt{M\theta^2 (6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2} \Big) (2M\theta^2 \omega \cos[t\omega] (6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \\
& \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega] + M\theta^2 \sin[\alpha]^2 \\
& \sin[t\omega]^2 (4\omega \sin[2t\omega] + 2\omega \sin[2\alpha - 2t\omega] - 2\omega \sin[2\alpha + 2t\omega])) \Big) / \\
& \Big(64M\theta (1 + \cos[2\alpha]) (M\theta^2 (6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \\
& \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2)^{3/2} \Big) + \\
& \Big(i \cos[\alpha] \cot[\alpha] \csc[t\omega]^2 (-4M\theta + 2M\theta \cos[2t\omega] - M\theta \cos[2\alpha - 2t\omega] - \\
& M\theta \cos[2\alpha + 2t\omega] + 2M\theta \cos[\alpha - t\omega]^2 \sec[\alpha]^2 + \\
& 2M\theta \cos[2\alpha] \cos[\alpha - t\omega]^2 \sec[\alpha]^2 + 2M\theta \sec[\alpha]^2 \sin[t\omega]^2 + \\
& 2M\theta \cos[2\alpha] \sec[\alpha]^2 \sin[t\omega]^2 + 2\sqrt{2} \sqrt{-M\theta^2 (-6 - 2\cos[2\alpha] + \\
& 2\cos[2t\omega] - \cos[2\alpha - 2t\omega] - \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2} \Big) \\
& \Big(4M\theta - 2M\theta \cos[2t\omega] + M\theta \cos[2\alpha - 2t\omega] + M\theta \cos[2\alpha + 2t\omega] - \\
& 2M\theta \cos[\alpha - t\omega]^2 \sec[\alpha]^2 - 2M\theta \cos[2\alpha] \cos[\alpha - t\omega]^2 \sec[\alpha]^2 - \\
& 2M\theta \sec[\alpha]^2 \sin[t\omega]^2 - 2M\theta \cos[2\alpha] \sec[\alpha]^2 \sin[t\omega]^2 + \\
& 2\sqrt{2} \sqrt{M\theta^2 (6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2} \Big)
\end{aligned}$$

$$\begin{aligned}
& \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2) \Big) \\
& \left(4M\omega \sin[2t\omega] + 2M\omega \sin[2\alpha - 2t\omega] - 2M\omega \sin[2\alpha + 2t\omega] - \right. \\
& \quad \left(\sqrt{2} (2M^2\omega \cos[t\omega] (6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \right. \\
& \quad \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega] + M^2 \sin[\alpha]^2 \sin[t\omega]^2 \\
& \quad \left. (4\omega \sin[2t\omega] + 2\omega \sin[2\alpha - 2t\omega] - 2\omega \sin[2\alpha + 2t\omega])) \right) \Big) / \\
& \quad \left(\sqrt{(M^2 (6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \right. \\
& \quad \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2)} \Big) \Big) / \\
& \left(64M (1 + \cos[2\alpha])^2 \sqrt{(M^2 (6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \right. \\
& \quad \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2)} \right. \\
& \quad \left. \sqrt{\left(\frac{1}{1 + \cos[2\alpha]} (-2 + 4M - 2\cos[2\alpha] - 2M\cos[2t\omega] + M\cos[2\alpha - 2t\omega] + \right. \right.} \\
& \quad \left. \left. M\cos[2\alpha + 2t\omega] - 2\sqrt{2} \sqrt{(M^2 (6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \right. \right.} \\
& \quad \left. \left. \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2)} \right) \right) \Big) - \\
& \left(i \cos[\alpha] \cot[\alpha] \csc[t\omega]^2 (4M - 2M\cos[2t\omega] + M\cos[2\alpha - 2t\omega] + \right. \\
& \quad M\cos[2\alpha + 2t\omega] - 2M\cos[\alpha - t\omega]^2 \sec[\alpha]^2 - \\
& \quad 2M\cos[2\alpha] \cos[\alpha - t\omega]^2 \sec[\alpha]^2 - 2M\sec[\alpha]^2 \sin[t\omega]^2 - \\
& \quad 2M\cos[2\alpha] \sec[\alpha]^2 \sin[t\omega]^2 + 2\sqrt{2} \sqrt{(-M^2 (-6 - 2\cos[2\alpha] + \\
& \quad 2\cos[2t\omega] - \cos[2\alpha - 2t\omega] - \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2)} \Big) \\
& \quad \left(-4M + 2M\cos[2t\omega] - M\cos[2\alpha - 2t\omega] - M\cos[2\alpha + 2t\omega] + \right. \\
& \quad 2M\cos[\alpha - t\omega]^2 \sec[\alpha]^2 + 2M\cos[2\alpha] \cos[\alpha - t\omega]^2 \sec[\alpha]^2 + \\
& \quad 2M\sec[\alpha]^2 \sin[t\omega]^2 + 2M\cos[2\alpha] \sec[\alpha]^2 \sin[t\omega]^2 + \\
& \quad 2\sqrt{2} \sqrt{(M^2 (6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \\
& \quad \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2)} \Big) \\
& \quad \left(4M\omega \sin[2t\omega] + 2M\omega \sin[2\alpha - 2t\omega] - 2M\omega \sin[2\alpha + 2t\omega] + \right. \\
& \quad \left(\sqrt{2} (2M^2\omega \cos[t\omega] (6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \right. \\
& \quad \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega] + M^2 \sin[\alpha]^2 \sin[t\omega]^2 \\
& \quad \left. (4\omega \sin[2t\omega] + 2\omega \sin[2\alpha - 2t\omega] - 2\omega \sin[2\alpha + 2t\omega])) \right) \Big) / \\
& \quad \left(\sqrt{(M^2 (6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \right. \\
& \quad \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2)} \Big) \Big) / \\
& \left(64M (1 + \cos[2\alpha])^2 \sqrt{(M^2 (6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \right. \\
& \quad \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2)} \right. \\
& \quad \left. \sqrt{\left(\frac{1}{1 + \cos[2\alpha]} (-2 + 4M - 2\cos[2\alpha] - 2M\cos[2t\omega] + M\cos[2\alpha - 2t\omega] + \right. \right.} \\
& \quad \left. \left. M\cos[2\alpha + 2t\omega] + 2\sqrt{2} \sqrt{(M^2 (6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \right. \right.} \\
& \quad \left. \left. \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2)} \right) \right) \Big) +
\end{aligned}$$

$$\begin{aligned}
& \left(i \cos[\alpha] \cot[\alpha] \csc[t \omega]^2 \left(-4 M \theta + 2 M \theta \cos[2 t \omega] - M \theta \cos[2 \alpha - 2 t \omega] - \right. \right. \\
& \quad M \theta \cos[2 \alpha + 2 t \omega] + 2 M \theta \cos[\alpha - t \omega]^2 \sec[\alpha]^2 + \\
& \quad 2 M \theta \cos[2 \alpha] \cos[\alpha - t \omega]^2 \sec[\alpha]^2 + 2 M \theta \sec[\alpha]^2 \sin[t \omega]^2 + \\
& \quad 2 M \theta \cos[2 \alpha] \sec[\alpha]^2 \sin[t \omega]^2 + 2 \sqrt{2} \sqrt{-M \theta^2 (-6 - 2 \cos[2 \alpha] + \\
& \quad 2 \cos[2 t \omega] - \cos[2 \alpha - 2 t \omega] - \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega]^2} \left. \right) \\
& \sqrt{\left(\frac{1}{1 + \cos[2 \alpha]} \left(-2 + 4 M \theta - 2 \cos[2 \alpha] - 2 M \theta \cos[2 t \omega] + M \theta \cos[2 \alpha - 2 t \omega] + \right. \right. \\
& \quad M \theta \cos[2 \alpha + 2 t \omega] - 2 \sqrt{2} \sqrt{M \theta^2 (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \\
& \quad \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega]^2} \left. \right) \left. \right)} \\
& \left(-4 M \theta \omega \cos[t \omega] \sec[\alpha]^2 \sin[t \omega] - 4 M \theta \omega \cos[2 \alpha] \cos[t \omega] \sec[\alpha]^2 \right. \\
& \quad \sin[t \omega] + 4 M \theta \omega \sin[2 t \omega] + 2 M \theta \omega \sin[2 \alpha - 2 t \omega] - \\
& \quad 4 M \theta \omega \cos[\alpha - t \omega] \sec[\alpha]^2 \sin[\alpha - t \omega] - 4 M \theta \omega \cos[2 \alpha] \\
& \quad \cos[\alpha - t \omega] \sec[\alpha]^2 \sin[\alpha - t \omega] - 2 M \theta \omega \sin[2 \alpha + 2 t \omega] + \\
& \quad \left(\sqrt{2} (2 M \theta^2 \omega \cos[t \omega] (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \right. \\
& \quad \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega] + M \theta^2 \sin[\alpha]^2 \sin[t \omega]^2 \\
& \quad (4 \omega \sin[2 t \omega] + 2 \omega \sin[2 \alpha - 2 t \omega] - 2 \omega \sin[2 \alpha + 2 t \omega])) \left. \right) \left. \right) / \\
& \left(\sqrt{M \theta^2 (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \right. \\
& \quad \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega]^2} \left. \right) \left. \right) / \\
& \left(32 M \theta (1 + \cos[2 \alpha]) \sqrt{M \theta^2 (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \right. \\
& \quad \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega]^2} \left. \right) - \\
& \left(i \cos[\alpha] \cot[\alpha] \csc[t \omega]^2 \left(4 M \theta - 2 M \theta \cos[2 t \omega] + M \theta \cos[2 \alpha - 2 t \omega] + \right. \right. \\
& \quad M \theta \cos[2 \alpha + 2 t \omega] - 2 M \theta \cos[\alpha - t \omega]^2 \sec[\alpha]^2 - \\
& \quad 2 M \theta \cos[2 \alpha] \cos[\alpha - t \omega]^2 \sec[\alpha]^2 - 2 M \theta \sec[\alpha]^2 \sin[t \omega]^2 - \\
& \quad 2 M \theta \cos[2 \alpha] \sec[\alpha]^2 \sin[t \omega]^2 + 2 \sqrt{2} \sqrt{-M \theta^2 (-6 - 2 \cos[2 \alpha] + \\
& \quad 2 \cos[2 t \omega] - \cos[2 \alpha - 2 t \omega] - \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega]^2} \left. \right) \\
& \sqrt{\left(\frac{1}{1 + \cos[2 \alpha]} \left(-2 + 4 M \theta - 2 \cos[2 \alpha] - 2 M \theta \cos[2 t \omega] + M \theta \cos[2 \alpha - 2 t \omega] + \right. \right. \\
& \quad M \theta \cos[2 \alpha + 2 t \omega] + 2 \sqrt{2} \sqrt{M \theta^2 (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \\
& \quad \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega]^2} \left. \right) \left. \right)} \\
& \left(4 M \theta \omega \cos[t \omega] \sec[\alpha]^2 \sin[t \omega] + 4 M \theta \omega \cos[2 \alpha] \cos[t \omega] \sec[\alpha]^2 \right. \\
& \quad \sin[t \omega] - 4 M \theta \omega \sin[2 t \omega] - 2 M \theta \omega \sin[2 \alpha - 2 t \omega] + \\
& \quad 4 M \theta \omega \cos[\alpha - t \omega] \sec[\alpha]^2 \sin[\alpha - t \omega] + 4 M \theta \omega \cos[2 \alpha] \\
& \quad \cos[\alpha - t \omega] \sec[\alpha]^2 \sin[\alpha - t \omega] + 2 M \theta \omega \sin[2 \alpha + 2 t \omega] + \\
& \quad \left(\sqrt{2} (2 M \theta^2 \omega \cos[t \omega] (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \right. \\
& \quad \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega] + M \theta^2 \sin[\alpha]^2 \sin[t \omega]^2 \\
& \quad (4 \omega \sin[2 t \omega] + 2 \omega \sin[2 \alpha - 2 t \omega] - 2 \omega \sin[2 \alpha + 2 t \omega])) \left. \right) \left. \right) / \\
& \left(\sqrt{M \theta^2 (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \right. \\
& \quad \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega]^2} \left. \right) \left. \right) /
\end{aligned}$$

$$\begin{aligned}
& \left. \left. \left. \cos[2\alpha + 2t\omega] \sin[\alpha]^2 \sin[t\omega]^2 \right) \right) \right) / \\
& \left(32 M0 (1 + \cos[2\alpha]) \sqrt{M0^2 (6 + 2 \cos[2\alpha] - 2 \cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2} \right) - \\
& \left(i \cos[\alpha] \cot[\alpha] \csc[t\omega]^2 \sqrt{\left(\frac{1}{1 + \cos[2\alpha]} (-2 + 4 M0 - 2 \cos[2\alpha] - \right. \right. \\
& \quad 2 M0 \cos[2t\omega] + M0 \cos[2\alpha - 2t\omega] + M0 \cos[2\alpha + 2t\omega] + \\
& \quad 2 \sqrt{2} \sqrt{M0^2 (6 + 2 \cos[2\alpha] - 2 \cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2} \right) \right) \\
& \left(-4 M0 + 2 M0 \cos[2t\omega] - M0 \cos[2\alpha - 2t\omega] - M0 \cos[2\alpha + 2t\omega] + \right. \\
& \quad 2 M0 \cos[\alpha - t\omega]^2 \sec[\alpha]^2 + 2 M0 \cos[2\alpha] \cos[\alpha - t\omega]^2 \sec[\alpha]^2 + \\
& \quad 2 M0 \sec[\alpha]^2 \sin[t\omega]^2 + 2 M0 \cos[2\alpha] \sec[\alpha]^2 \sin[t\omega]^2 + \\
& \quad 2 \sqrt{2} \sqrt{M0^2 (6 + 2 \cos[2\alpha] - 2 \cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2} \left(-4 M0 \omega \cos[t\omega] \sec[\alpha]^2 \sin[t\omega] - \right. \\
& \quad 4 M0 \omega \cos[2\alpha] \cos[t\omega] \sec[\alpha]^2 \sin[t\omega] + 4 M0 \omega \sin[2t\omega] + \\
& \quad 2 M0 \omega \sin[2\alpha - 2t\omega] - 4 M0 \omega \cos[\alpha - t\omega] \sec[\alpha]^2 \sin[\alpha - t\omega] - \\
& \quad 4 M0 \omega \cos[2\alpha] \cos[\alpha - t\omega] \sec[\alpha]^2 \sin[\alpha - t\omega] - 2 M0 \omega \sin[2\alpha + 2t\omega] + \\
& \quad \left(\sqrt{2} (-2 M0^2 \omega \cos[t\omega] (-6 - 2 \cos[2\alpha] + 2 \cos[2t\omega] - \cos[2\alpha - 2t\omega] - \right. \\
& \quad \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega] - M0^2 \sin[\alpha]^2 \sin[t\omega]^2 \\
& \quad \left. \left. \left. (-4 \omega \sin[2t\omega] - 2 \omega \sin[2\alpha - 2t\omega] + 2 \omega \sin[2\alpha + 2t\omega]) \right) \right) \right) / \\
& \left(\sqrt{(-M0^2 (-6 - 2 \cos[2\alpha] + 2 \cos[2t\omega] - \cos[2\alpha - 2t\omega] - \right. \right. \\
& \quad \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2} \left. \left. \left. \right) \right) \right) / \\
& \left(32 M0 (1 + \cos[2\alpha]) \sqrt{M0^2 (6 + 2 \cos[2\alpha] - 2 \cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2} \right) + \\
& \left(i \cos[\alpha] \cot[\alpha] \csc[t\omega]^2 \sqrt{\left(\frac{1}{1 + \cos[2\alpha]} (-2 + 4 M0 - 2 \cos[2\alpha] - \right. \right. \\
& \quad 2 M0 \cos[2t\omega] + M0 \cos[2\alpha - 2t\omega] + M0 \cos[2\alpha + 2t\omega] - \\
& \quad 2 \sqrt{2} \sqrt{M0^2 (6 + 2 \cos[2\alpha] - 2 \cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2} \right) \right) \\
& \left(4 M0 - 2 M0 \cos[2t\omega] + M0 \cos[2\alpha - 2t\omega] + M0 \cos[2\alpha + 2t\omega] - \right. \\
& \quad 2 M0 \cos[\alpha - t\omega]^2 \sec[\alpha]^2 - 2 M0 \cos[2\alpha] \cos[\alpha - t\omega]^2 \sec[\alpha]^2 - \\
& \quad 2 M0 \sec[\alpha]^2 \sin[t\omega]^2 - 2 M0 \cos[2\alpha] \sec[\alpha]^2 \sin[t\omega]^2 + \\
& \quad 2 \sqrt{2} \sqrt{M0^2 (6 + 2 \cos[2\alpha] - 2 \cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2} \left(4 M0 \omega \cos[t\omega] \sec[\alpha]^2 \sin[t\omega] + \right. \\
& \quad 4 M0 \omega \cos[2\alpha] \cos[t\omega] \sec[\alpha]^2 \sin[t\omega] - 4 M0 \omega \sin[2t\omega] - \\
& \quad 2 M0 \omega \sin[2\alpha - 2t\omega] + 4 M0 \omega \cos[\alpha - t\omega] \sec[\alpha]^2 \sin[\alpha - t\omega] + \\
& \quad 4 M0 \omega \cos[2\alpha] \cos[\alpha - t\omega] \sec[\alpha]^2 \sin[\alpha - t\omega] + 2 M0 \omega \sin[2\alpha + 2t\omega] + \\
& \quad \left(\sqrt{2} (-2 M0^2 \omega \cos[t\omega] (-6 - 2 \cos[2\alpha] + 2 \cos[2t\omega] - \cos[2\alpha - 2t\omega] - \right. \\
& \quad \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega] - M0^2 \sin[\alpha]^2 \sin[t\omega]^2 \\
& \quad \left. \left. \left. (-4 \omega \sin[2t\omega] - 2 \omega \sin[2\alpha - 2t\omega] + 2 \omega \sin[2\alpha + 2t\omega]) \right) \right) \right) / \\
& \left(\sqrt{(-M0^2 (-6 - 2 \cos[2\alpha] + 2 \cos[2t\omega] - \cos[2\alpha - 2t\omega] - \right. \right.
\end{aligned}$$

$$\begin{aligned}
& \left. \left. \left. \left. \cos[2\alpha + 2t\omega] \sin[\alpha]^2 \sin[t\omega]^2 \right) \right) \right) \right) / \\
& \left(32 M0 (1 + \cos[2\alpha]) \sqrt{M0^2 (6 + 2 \cos[2\alpha] - 2 \cos[2t\omega] + \cos[2\alpha - 2t\omega] + \right. \\
& \left. \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2} \right) \\
& \left(- \left(\left(i M0 (1 + \cos[2\alpha]) \sec[\alpha] \sin[t\omega]^2 \sqrt{\left(\frac{1}{1 + \cos[2\alpha]} (-2 + 4 M0 - \right. \right. \right. \right. \\
& \left. \left. \left. 2 \cos[2\alpha] - 2 M0 \cos[2t\omega] + M0 \cos[2\alpha - 2t\omega] + \right. \right. \right. \right. \\
& \left. \left. \left. M0 \cos[2\alpha + 2t\omega] - 2 \sqrt{2} \sqrt{M0^2 (6 + 2 \cos[2\alpha] - 2 \cos[2t\omega] + \cos[2\alpha - 2t\omega] + \right. \right. \right. \right. \\
& \left. \left. \left. \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2} \right) \right) \right) \right) \right) \\
& \tan[\alpha] \right) / \left(2 \sqrt{M0^2 (6 + 2 \cos[2\alpha] - 2 \cos[2t\omega] + \cos[2\alpha - 2t\omega] + \right. \\
& \left. \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2} \right) + \\
& \left(i M0 (1 + \cos[2\alpha]) \sec[\alpha] \sin[t\omega]^2 \sqrt{\left(\frac{1}{1 + \cos[2\alpha]} (-2 + 4 M0 - \right. \right. \\
& \left. \left. 2 \cos[2\alpha] - 2 M0 \cos[2t\omega] + M0 \cos[2\alpha - 2t\omega] + M0 \cos[2\alpha + 2t\omega] + \right. \right. \\
& \left. \left. 2 \sqrt{2} \sqrt{M0^2 (6 + 2 \cos[2\alpha] - 2 \cos[2t\omega] + \cos[2\alpha - 2t\omega] + \right. \right. \\
& \left. \left. \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2} \right) \right) \tan[\alpha] \right) / \\
& \left(2 \sqrt{M0^2 (6 + 2 \cos[2\alpha] - 2 \cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega]) \right. \\
& \left. \sin[\alpha]^2 \sin[t\omega]^2} \right) \right) \right) \\
& L21[\alpha_, \omega_, t_, M0_, s_, r_, \theta_] := \frac{1}{M0} \sec[\alpha]^2 (\cos[\alpha - t\omega]^2 + \sin[t\omega]^2) \\
& \left(s + \left(\left(\left(-4 M0 + 2 M0 \cos[2t\omega] - M0 \cos[2\alpha - 2t\omega] - M0 \cos[2\alpha + 2t\omega] + 2 M0 \cos[\alpha - t\omega] \right)^2 \right. \right. \right. \\
& \left. \left. \left. \sec[\alpha]^2 + 2 M0 \cos[2\alpha] \cos[\alpha - t\omega]^2 \sec[\alpha]^2 + 2 M0 \sec[\alpha]^2 \sin[t\omega]^2 + \right. \right. \right. \\
& \left. \left. \left. 2 M0 \cos[2\alpha] \sec[\alpha]^2 \sin[t\omega]^2 + 2 \sqrt{2} \sqrt{-M0^2 (-6 - 2 \cos[2\alpha] + \right. \right. \right. \\
& \left. \left. \left. 2 \cos[2t\omega] - \cos[2\alpha - 2t\omega] - \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2} \right) \right) \right) + \\
& \sqrt{\left(\frac{1}{1 + \cos[2\alpha]} (-2 + 4 M0 - 2 \cos[2\alpha] - 2 M0 \cos[2t\omega] + M0 \cos[2\alpha - 2t\omega] + \right. \\
& \left. M0 \cos[2\alpha + 2t\omega] - 2 \sqrt{2} \sqrt{M0^2 (6 + 2 \cos[2\alpha] - 2 \cos[2t\omega] + \right. \\
& \left. \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2} \right) \right) \right) / \\
& \left(8 \sqrt{M0^2 (6 + 2 \cos[2\alpha] - 2 \cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega]) \right. \\
& \left. \sin[\alpha]^2 \sin[t\omega]^2} \right) + \\
& \left(\left(4 M0 - 2 M0 \cos[2t\omega] + M0 \cos[2\alpha - 2t\omega] + M0 \cos[2\alpha + 2t\omega] - 2 M0 \cos[\alpha - t\omega] \right)^2 \right. \\
& \left. \sec[\alpha]^2 - 2 M0 \cos[2\alpha] \cos[\alpha - t\omega]^2 \sec[\alpha]^2 - 2 M0 \sec[\alpha]^2 \sin[t\omega]^2 - \right. \\
& \left. 2 M0 \cos[2\alpha] \sec[\alpha]^2 \sin[t\omega]^2 + 2 \sqrt{2} \sqrt{-M0^2 (-6 - 2 \cos[2\alpha] + \right. \\
& \left. 2 \cos[2t\omega] - \cos[2\alpha - 2t\omega] - \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2} \right) \right)
\end{aligned}$$

$$\begin{aligned}
& \sqrt{\left(\frac{1}{1 + \cos[2\alpha]} \left(-2 + 4M\theta - 2\cos[2\alpha] - 2M\theta\cos[2t\omega] + M\theta\cos[2\alpha - 2t\omega] + \right. \right. \\
& \quad \left. \left. M\theta\cos[2\alpha + 2t\omega] + 2\sqrt{2}\sqrt{M\theta^2(6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \right. \right. \\
& \quad \left. \left. \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega])\sin[\alpha]^2\sin[t\omega]^2} \right) \right) \Bigg/} \\
& \left(8\sqrt{M\theta^2(6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega])\sin[\alpha]^2\sin[t\omega]^2} \right) \\
& \quad \left. \sin[\alpha]^2\sin[t\omega]^2 \right) \Bigg) \\
& \left(s \left(\left(\sqrt{\left(\frac{1}{1 + \cos[2\alpha]} \left(-2 + 4M\theta - 2\cos[2\alpha] - 2M\theta\cos[2t\omega] + M\theta\cos[2\alpha - 2t\omega] + \right. \right. \right. \right. \right. \right. \\
& \quad \left. \left. \left. M\theta\cos[2\alpha + 2t\omega] - 2\sqrt{2}\sqrt{M\theta^2(6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \right. \right. \right. \right. \\
& \quad \left. \left. \left. \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega])\sin[\alpha]^2\sin[t\omega]^2} \right) \right) \right) \right. \\
& \quad \left(4M\theta - 2M\theta\cos[2t\omega] + M\theta\cos[2\alpha - 2t\omega] + M\theta\cos[2\alpha + 2t\omega] - \right. \\
& \quad 2M\theta\cos[\alpha - t\omega]^2\sec[\alpha]^2 - 2M\theta\cos[2\alpha]\cos[\alpha - t\omega]^2\sec[\alpha]^2 - 2M\theta\sec[\alpha]^2 \\
& \quad \sin[t\omega]^2 - 2M\theta\cos[2\alpha]\sec[\alpha]^2\sin[t\omega]^2 + 2\sqrt{2}\sqrt{M\theta^2(6 + 2\cos[2\alpha] - } \\
& \quad \left. \left. 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega])\sin[\alpha]^2\sin[t\omega]^2} \right) \right) \Bigg/} \\
& \left(8\sqrt{M\theta^2(6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega])\sin[\alpha]^2\sin[t\omega]^2} \right) \\
& \quad \left. \sin[\alpha]^2\sin[t\omega]^2 \right) + \\
& \left(\sqrt{\left(\frac{1}{1 + \cos[2\alpha]} \left(-2 + 4M\theta - 2\cos[2\alpha] - 2M\theta\cos[2t\omega] + M\theta\cos[2\alpha - 2t\omega] + \right. \right. \right. \\
& \quad \left. \left. M\theta\cos[2\alpha + 2t\omega] + 2\sqrt{2}\sqrt{M\theta^2(6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \right. \right. \\
& \quad \left. \left. \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega])\sin[\alpha]^2\sin[t\omega]^2} \right) \right) \Bigg) \\
& \quad \left(-4M\theta + 2M\theta\cos[2t\omega] - M\theta\cos[2\alpha - 2t\omega] - M\theta\cos[2\alpha + 2t\omega] + \right. \\
& \quad 2M\theta\cos[\alpha - t\omega]^2\sec[\alpha]^2 + 2M\theta\cos[2\alpha]\cos[\alpha - t\omega]^2\sec[\alpha]^2 + 2M\theta\sec[\alpha]^2 \\
& \quad \sin[t\omega]^2 + 2M\theta\cos[2\alpha]\sec[\alpha]^2\sin[t\omega]^2 + 2\sqrt{2}\sqrt{M\theta^2(6 + 2\cos[2\alpha] - } \\
& \quad \left. \left. 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega])\sin[\alpha]^2\sin[t\omega]^2} \right) \right) \Bigg/} \\
& \left(8\sqrt{M\theta^2(6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega])\sin[\alpha]^2\sin[t\omega]^2} \right) \\
& \quad \left. \sin[\alpha]^2\sin[t\omega]^2 \right) \Bigg) + \\
& e^{i\theta} r \left(- \left(\left(iM\theta(1 + \cos[2\alpha])\sec[\alpha]\sin[t\omega]^2 \sqrt{\left(\frac{1}{1 + \cos[2\alpha]} \left(-2 + 4M\theta - \right. \right. \right. \right. \right. \right. \right. \right. \\
& \quad 2\cos[2\alpha] - 2M\theta\cos[2t\omega] + M\theta\cos[2\alpha - 2t\omega] + M\theta\cos[2\alpha + 2t\omega] - \\
& \quad 2\sqrt{2}\sqrt{M\theta^2(6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega])\sin[\alpha]^2\sin[t\omega]^2} \right) \right) \Bigg/} \\
& \quad \left(2\sqrt{M\theta^2(6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega])\sin[\alpha]^2\sin[t\omega]^2} \right) \\
& \quad \left. \sin[\alpha]^2\sin[t\omega]^2 \right) \Bigg) + \left(iM\theta(1 + \cos[2\alpha])\sec[\alpha]\sin[t\omega]^2 \right)
\end{aligned}$$

$$\begin{aligned}
& \sqrt{\left(\frac{1}{1 + \cos[2\alpha]} \left(-2 + 4M\theta - 2\cos[2\alpha] - 2M\theta\cos[2t\omega] + M\theta\cos[2\alpha - 2t\omega] + \right. \right. \\
& \quad \left. \left. M\theta\cos[2\alpha + 2t\omega] + 2\sqrt{2}\sqrt{M\theta^2(6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \right. \right. \\
& \quad \left. \left. \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega])\sin[\alpha]^2\sin[t\omega]^2} \right) \right) \tan[\alpha] \Bigg) / \\
& \left(2\sqrt{M\theta^2(6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega])} \right. \\
& \quad \left. \sin[\alpha]^2\sin[t\omega]^2) \right) \Bigg) + \\
& \left(- \left(\left(iM\theta(1 + \cos[2\alpha])\sec[\alpha]\sin[t\omega]^2 \sqrt{\left(\frac{1}{1 + \cos[2\alpha]} \left(-2 + 4M\theta - 2\cos[2\alpha] - \right. \right. \right. \right. \right. \right. \\
& \quad \left. \left. \left. 2M\theta\cos[2t\omega] + M\theta\cos[2\alpha - 2t\omega] + M\theta\cos[2\alpha + 2t\omega] - \right. \right. \right. \\
& \quad \left. \left. \left. 2\sqrt{2}\sqrt{M\theta^2(6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \right. \right. \right. \\
& \quad \left. \left. \left. \cos[2\alpha + 2t\omega])\sin[\alpha]^2\sin[t\omega]^2} \right) \right) \tan[\alpha] \right) \Bigg) / \\
& \left(2\sqrt{M\theta^2(6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega])} \right. \\
& \quad \left. \sin[\alpha]^2\sin[t\omega]^2) \right) \Bigg) + \left(iM\theta(1 + \cos[2\alpha])\sec[\alpha]\sin[t\omega]^2 \right. \\
& \quad \left. \sqrt{\left(\frac{1}{1 + \cos[2\alpha]} \left(-2 + 4M\theta - 2\cos[2\alpha] - 2M\theta\cos[2t\omega] + M\theta\cos[2\alpha - 2t\omega] + \right. \right. \right. \right. \\
& \quad \left. \left. \left. M\theta\cos[2\alpha + 2t\omega] + 2\sqrt{2}\sqrt{M\theta^2(6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \right. \right. \right. \\
& \quad \left. \left. \left. \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega])\sin[\alpha]^2\sin[t\omega]^2} \right) \right) \tan[\alpha] \right) \Bigg) / \\
& \left(2\sqrt{M\theta^2(6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega])} \right. \\
& \quad \left. \sin[\alpha]^2\sin[t\omega]^2) \right) \Bigg) \\
& \left(e^{-i\theta} r \left(\left(\sqrt{\left(\frac{1}{1 + \cos[2\alpha]} \left(-2 + 4M\theta - 2\cos[2\alpha] - 2M\theta\cos[2t\omega] + M\theta\cos[2\alpha - 2t\omega] + \right. \right. \right. \right. \right. \right. \\
& \quad \left. \left. \left. M\theta\cos[2\alpha + 2t\omega] - 2\sqrt{2}\sqrt{M\theta^2(6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \right. \right. \right. \\
& \quad \left. \left. \left. \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega])\sin[\alpha]^2\sin[t\omega]^2} \right) \right) \right. \right. \\
& \quad \left(4M\theta - 2M\theta\cos[2t\omega] + M\theta\cos[2\alpha - 2t\omega] + M\theta\cos[2\alpha + 2t\omega] - \right. \\
& \quad \left. 2M\theta\cos[\alpha - t\omega]^2\sec[\alpha]^2 - 2M\theta\cos[2\alpha]\cos[\alpha - t\omega]^2\sec[\alpha]^2 - 2M\theta\sec[\alpha]^2 \right. \\
& \quad \left. \sin[t\omega]^2 - 2M\theta\cos[2\alpha]\sec[\alpha]^2\sin[t\omega]^2 + 2\sqrt{2}\sqrt{M\theta^2(6 + 2\cos[2\alpha] - \right. \\
& \quad \left. 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega])\sin[\alpha]^2\sin[t\omega]^2} \right) \Bigg) \Bigg) / \\
& \left(8\sqrt{M\theta^2(6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega])} \right. \\
& \quad \left. \sin[\alpha]^2\sin[t\omega]^2) \right) + \\
& \left(\sqrt{\left(\frac{1}{1 + \cos[2\alpha]} \left(-2 + 4M\theta - 2\cos[2\alpha] - 2M\theta\cos[2t\omega] + M\theta\cos[2\alpha - 2t\omega] + \right. \right. \right. \right. \\
& \quad \left. \left. \left. M\theta\cos[2\alpha + 2t\omega] + 2\sqrt{2}\sqrt{M\theta^2(6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \right. \right. \right. \\
& \quad \left. \left. \left. \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega])\sin[\alpha]^2\sin[t\omega]^2} \right) \right) \right. \\
& \quad \left(-4M\theta + 2M\theta\cos[2t\omega] - M\theta\cos[2\alpha - 2t\omega] - M\theta\cos[2\alpha + 2t\omega] + \right.
\end{aligned}$$

$$\begin{aligned}
& \left(2 M0 \cos[\alpha - t \omega]^2 \sec[\alpha]^2 + 2 M0 \cos[2 \alpha] \cos[\alpha - t \omega]^2 \sec[\alpha]^2 + 2 M0 \sec[\alpha]^2 \right. \\
& \quad \left. \sin[t \omega]^2 + 2 M0 \cos[2 \alpha] \sec[\alpha]^2 \sin[t \omega]^2 + 2 \sqrt{2} \sqrt{M0^2 (6 + 2 \cos[2 \alpha] - \right.} \\
& \quad \left. 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega]^2} \right) \Bigg) / \\
& \left(8 \sqrt{M0^2 (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega])} \right. \\
& \quad \left. \sin[\alpha]^2 \sin[t \omega]^2} \right) \Bigg) + \\
& s \left(- \left(\left(i M0 (1 + \cos[2 \alpha]) \sec[\alpha] \sin[t \omega]^2 \sqrt{\left(\frac{1}{1 + \cos[2 \alpha]} (-2 + 4 M0 - \right. \right.} \right. \right. \\
& \quad \left. \left. 2 \cos[2 \alpha] - 2 M0 \cos[2 t \omega] + M0 \cos[2 \alpha - 2 t \omega] + M0 \cos[2 \alpha + 2 t \omega] - \right. \right. \\
& \quad \left. \left. 2 \sqrt{2} \sqrt{M0^2 (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \right. \right.} \right. \\
& \quad \left. \left. \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega]^2} \right) \right) \tan[\alpha] \right) \Bigg) / \\
& \left(2 \sqrt{M0^2 (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega])} \right. \\
& \quad \left. \sin[\alpha]^2 \sin[t \omega]^2} \right) \Bigg) + \left(i M0 (1 + \cos[2 \alpha]) \sec[\alpha] \sin[t \omega]^2 \right. \\
& \quad \left. \sqrt{\left(\frac{1}{1 + \cos[2 \alpha]} (-2 + 4 M0 - 2 \cos[2 \alpha] - 2 M0 \cos[2 t \omega] + M0 \cos[2 \alpha - 2 t \omega] + \right. \right.} \right. \\
& \quad \left. \left. M0 \cos[2 \alpha + 2 t \omega] + 2 \sqrt{2} \sqrt{M0^2 (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \right. \right.} \right. \\
& \quad \left. \left. \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega]^2} \right) \right) \tan[\alpha] \Bigg) / \\
& \left(2 \sqrt{M0^2 (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega])} \right. \\
& \quad \left. \sin[\alpha]^2 \sin[t \omega]^2} \right) \Bigg) \Bigg) + \\
& i \left(\left(- \left(\left(\sqrt{\left(\frac{1}{1 + \cos[2 \alpha]} (-2 + 4 M0 - 2 \cos[2 \alpha] - 2 M0 \cos[2 t \omega] + M0 \cos[2 \alpha - 2 t \omega] + \right. \right.} \right. \right. \right. \right. \\
& \quad \left. \left. M0 \cos[2 \alpha + 2 t \omega] - 2 \sqrt{2} \sqrt{M0^2 (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \right. \right.} \right. \\
& \quad \left. \left. \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega]^2} \right) \right) \right) \Bigg) \\
& \quad \left(4 M0 - 2 M0 \cos[2 t \omega] + M0 \cos[2 \alpha - 2 t \omega] + M0 \cos[2 \alpha + 2 t \omega] - \right. \\
& \quad \left. 2 M0 \cos[\alpha - t \omega]^2 \sec[\alpha]^2 - 2 M0 \cos[2 \alpha] \cos[\alpha - t \omega]^2 \sec[\alpha]^2 - 2 M0 \sec[\alpha]^2 \right. \\
& \quad \left. \sin[t \omega]^2 - 2 M0 \cos[2 \alpha] \sec[\alpha]^2 \sin[t \omega]^2 + 2 \sqrt{2} \sqrt{M0^2 (6 + 2 \cos[2 \alpha] - \right.} \\
& \quad \left. 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega]^2} \right) \\
& \quad \left(2 M0^2 \omega \cos[t \omega] (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \right. \\
& \quad \left. \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega] + M0^2 \sin[\alpha]^2 \sin[t \omega]^2 \right. \\
& \quad \left. (4 \omega \sin[2 t \omega] + 2 \omega \sin[2 \alpha - 2 t \omega] - 2 \omega \sin[2 \alpha + 2 t \omega]) \right) \Bigg) / \\
& \left(16 (M0^2 (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega]) \right. \\
& \quad \left. \sin[\alpha]^2 \sin[t \omega]^2)^{3/2} \right) \Bigg) - \\
& \left(\sqrt{\left(\frac{1}{1 + \cos[2 \alpha]} (-2 + 4 M0 - 2 \cos[2 \alpha] - 2 M0 \cos[2 t \omega] + M0 \cos[2 \alpha - 2 t \omega] + \right. \right.} \right. \\
& \quad \left. \left. M0 \cos[2 \alpha + 2 t \omega] + 2 \sqrt{2} \sqrt{M0^2 (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \right. \right.} \right.
\end{aligned}$$

$$\begin{aligned}
& \left. \left(\cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega] \right) \sin[\alpha]^2 \sin[t\omega]^2 \right) \Bigg) \\
& \left(-4M\theta + 2M\theta \cos[2t\omega] - M\theta \cos[2\alpha - 2t\omega] - M\theta \cos[2\alpha + 2t\omega] + \right. \\
& \quad 2M\theta \cos[\alpha - t\omega]^2 \sec[\alpha]^2 + 2M\theta \cos[2\alpha] \cos[\alpha - t\omega]^2 \sec[\alpha]^2 + \\
& \quad 2M\theta \sec[\alpha]^2 \sin[t\omega]^2 + 2M\theta \cos[2\alpha] \sec[\alpha]^2 \sin[t\omega]^2 + \\
& \quad 2\sqrt{2} \sqrt{M\theta^2 (6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega])} \\
& \quad \sin[\alpha]^2 \sin[t\omega]^2) \left(2M\theta^2 \omega \cos[t\omega] (6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \right. \\
& \quad \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega] + M\theta^2 \sin[\alpha]^2 \\
& \quad \sin[t\omega]^2 (4\omega \sin[2t\omega] + 2\omega \sin[2\alpha - 2t\omega] - 2\omega \sin[2\alpha + 2t\omega]) \Bigg) \Bigg) / \\
& \left(16 (M\theta^2 (6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega]) \right. \\
& \quad \sin[\alpha]^2 \sin[t\omega]^2)^{3/2} \Bigg) + \\
& \left(\left(4M\theta - 2M\theta \cos[2t\omega] + M\theta \cos[2\alpha - 2t\omega] + M\theta \cos[2\alpha + 2t\omega] - \right. \right. \\
& \quad 2M\theta \cos[\alpha - t\omega]^2 \sec[\alpha]^2 - 2M\theta \cos[2\alpha] \cos[\alpha - t\omega]^2 \sec[\alpha]^2 - 2M\theta \sec[\alpha]^2 \\
& \quad \sin[t\omega]^2 - 2M\theta \cos[2\alpha] \sec[\alpha]^2 \sin[t\omega]^2 + 2\sqrt{2} \sqrt{M\theta^2 (6 + 2\cos[2\alpha] - \\
& \quad 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega])} \sin[\alpha]^2 \sin[t\omega]^2) \Bigg) \\
& \left(4M\theta \omega \sin[2t\omega] + 2M\theta \omega \sin[2\alpha - 2t\omega] - 2M\theta \omega \sin[2\alpha + 2t\omega] - \right. \\
& \quad \left(\sqrt{2} (2M\theta^2 \omega \cos[t\omega] (6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \right. \\
& \quad \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega] + M\theta^2 \sin[\alpha]^2 \sin[t\omega]^2 \\
& \quad (4\omega \sin[2t\omega] + 2\omega \sin[2\alpha - 2t\omega] - 2\omega \sin[2\alpha + 2t\omega]) \Bigg) \Bigg) / \\
& \left(\sqrt{M\theta^2 (6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \right. \\
& \quad \cos[2\alpha + 2t\omega])} \sin[\alpha]^2 \sin[t\omega]^2) \Bigg) \Bigg) / \\
& \left(16 (1 + \cos[2\alpha]) \sqrt{M\theta^2 (6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \right. \\
& \quad \cos[2\alpha + 2t\omega])} \sin[\alpha]^2 \sin[t\omega]^2) \\
& \sqrt{\left(\frac{1}{1 + \cos[2\alpha]} (-2 + 4M\theta - 2\cos[2\alpha] - 2M\theta \cos[2t\omega] + M\theta \cos[2\alpha - 2t\omega] + \right. \\
& \quad M\theta \cos[2\alpha + 2t\omega] - 2\sqrt{2} \sqrt{M\theta^2 (6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \right. \\
& \quad \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega])} \sin[\alpha]^2 \sin[t\omega]^2) \Bigg) \Bigg) + \\
& \left(\left(-4M\theta + 2M\theta \cos[2t\omega] - M\theta \cos[2\alpha - 2t\omega] - M\theta \cos[2\alpha + 2t\omega] + \right. \right. \\
& \quad 2M\theta \cos[\alpha - t\omega]^2 \sec[\alpha]^2 + 2M\theta \cos[2\alpha] \cos[\alpha - t\omega]^2 \sec[\alpha]^2 + 2M\theta \sec[\alpha]^2 \\
& \quad \sin[t\omega]^2 + 2M\theta \cos[2\alpha] \sec[\alpha]^2 \sin[t\omega]^2 + 2\sqrt{2} \sqrt{M\theta^2 (6 + 2\cos[2\alpha] - \\
& \quad 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega])} \sin[\alpha]^2 \sin[t\omega]^2) \Bigg) \\
& \left(4M\theta \omega \sin[2t\omega] + 2M\theta \omega \sin[2\alpha - 2t\omega] - 2M\theta \omega \sin[2\alpha + 2t\omega] + \right. \\
& \quad \left(\sqrt{2} (2M\theta^2 \omega \cos[t\omega] (6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \right. \\
& \quad \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega] + M\theta^2 \sin[\alpha]^2 \sin[t\omega]^2 \\
& \quad (4\omega \sin[2t\omega] + 2\omega \sin[2\alpha - 2t\omega] - 2\omega \sin[2\alpha + 2t\omega]) \Bigg) \Bigg) / \\
& \left(\sqrt{M\theta^2 (6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \right. \\
& \quad \cos[2\alpha + 2t\omega])} \sin[\alpha]^2 \sin[t\omega]^2) \Bigg) \Bigg) /
\end{aligned}$$

$$\begin{aligned}
& \left(16 (1 + \cos[2\alpha]) \sqrt{M\theta^2 (6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \right. \\
& \quad \left. \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2} \right. \\
& \quad \left. \sqrt{\left(\frac{1}{1 + \cos[2\alpha]} (-2 + 4M\theta - 2\cos[2\alpha] - 2M\theta \cos[2t\omega] + M\theta \cos[2\alpha - 2t\omega] + \right. \right. \\
& \quad \left. \left. M\theta \cos[2\alpha + 2t\omega] + 2\sqrt{2} \sqrt{M\theta^2 (6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \right. \right. \\
& \quad \left. \left. \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2} \right) \right) \right) + \\
& \left(\sqrt{\left(\frac{1}{1 + \cos[2\alpha]} (-2 + 4M\theta - 2\cos[2\alpha] - 2M\theta \cos[2t\omega] + M\theta \cos[2\alpha - 2t\omega] + \right. \right. \\
& \quad \left. \left. M\theta \cos[2\alpha + 2t\omega] - 2\sqrt{2} \sqrt{M\theta^2 (6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \right. \right. \\
& \quad \left. \left. \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2} \right) \right) \right) \\
& \left(-4M\theta\omega \cos[t\omega] \sec[\alpha]^2 \sin[t\omega] - 4M\theta\omega \cos[2\alpha] \cos[t\omega] \sec[\alpha]^2 \right. \\
& \quad \sin[t\omega] + 4M\theta\omega \sin[2t\omega] + 2M\theta\omega \sin[2\alpha - 2t\omega] - 4M\theta\omega \cos[\alpha - t\omega] \\
& \quad \sec[\alpha]^2 \sin[\alpha - t\omega] - 4M\theta\omega \cos[2\alpha] \cos[\alpha - t\omega] \sec[\alpha]^2 \sin[\alpha - t\omega] - \\
& \quad 2M\theta\omega \sin[2\alpha + 2t\omega] + \left(\sqrt{2} (2M\theta^2\omega \cos[t\omega] (6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \right. \\
& \quad \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega] + M\theta^2 \sin[\alpha]^2 \\
& \quad \sin[t\omega]^2 (4\omega \sin[2t\omega] + 2\omega \sin[2\alpha - 2t\omega] - 2\omega \sin[2\alpha + 2t\omega]) \right) \Big) \Big) / \\
& \left(\sqrt{M\theta^2 (6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \right. \\
& \quad \left. \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2} \right) \Big) \Big) / \\
& \left(8\sqrt{M\theta^2 (6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega]) \right. \\
& \quad \left. \sin[\alpha]^2 \sin[t\omega]^2} \right) + \\
& \left(\sqrt{\left(\frac{1}{1 + \cos[2\alpha]} (-2 + 4M\theta - 2\cos[2\alpha] - 2M\theta \cos[2t\omega] + M\theta \cos[2\alpha - 2t\omega] + \right. \right. \\
& \quad \left. \left. M\theta \cos[2\alpha + 2t\omega] + 2\sqrt{2} \sqrt{M\theta^2 (6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \right. \right. \\
& \quad \left. \left. \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2} \right) \right) \right) \\
& \left(4M\theta\omega \cos[t\omega] \sec[\alpha]^2 \sin[t\omega] + 4M\theta\omega \cos[2\alpha] \cos[t\omega] \sec[\alpha]^2 \right. \\
& \quad \sin[t\omega] - 4M\theta\omega \sin[2t\omega] - 2M\theta\omega \sin[2\alpha - 2t\omega] + 4M\theta\omega \cos[\alpha - t\omega] \\
& \quad \sec[\alpha]^2 \sin[\alpha - t\omega] + 4M\theta\omega \cos[2\alpha] \cos[\alpha - t\omega] \sec[\alpha]^2 \sin[\alpha - t\omega] + \\
& \quad 2M\theta\omega \sin[2\alpha + 2t\omega] + \left(\sqrt{2} (2M\theta^2\omega \cos[t\omega] (6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \right. \\
& \quad \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega] + M\theta^2 \sin[\alpha]^2 \\
& \quad \sin[t\omega]^2 (4\omega \sin[2t\omega] + 2\omega \sin[2\alpha - 2t\omega] - 2\omega \sin[2\alpha + 2t\omega]) \right) \Big) \Big) / \\
& \left(\sqrt{M\theta^2 (6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \right. \\
& \quad \left. \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2} \right) \Big) \Big) \Big) / \\
& \left(8\sqrt{M\theta^2 (6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega]) \right. \\
& \quad \left. \sin[\alpha]^2 \sin[t\omega]^2} \right) \Big) \\
& \left(- \left(i M\theta (1 + \cos[2\alpha]) \sec[\alpha] \sin[t\omega]^2 \sqrt{\left(\frac{1}{1 + \cos[2\alpha]} (-2 + 4M\theta - \right. \right. \right.
\end{aligned}$$

$$\begin{aligned}
& \left(2 \cos[2\alpha] - 2M\theta \cos[2t\omega] + M\theta \cos[2\alpha - 2t\omega] + M\theta \cos[2\alpha + 2t\omega] - \right. \\
& \left. 2\sqrt{2} \sqrt{M\theta^2 (6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega])} \sin[\alpha]^2 \sin[t\omega]^2) \right) \tan[\alpha] \Bigg/ \\
& \left(2\sqrt{M\theta^2 (6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega])} \sin[\alpha]^2 \sin[t\omega]^2 \right) + \left(i M\theta (1 + \cos[2\alpha]) \sec[\alpha] \sin[t\omega]^2 \right. \\
& \left. \sqrt{\left(\frac{1}{1 + \cos[2\alpha]} (-2 + 4M\theta - 2\cos[2\alpha] - 2M\theta \cos[2t\omega] + M\theta \cos[2\alpha - 2t\omega] + \right. \right. \\
& \left. \left. M\theta \cos[2\alpha + 2t\omega] + 2\sqrt{2} \sqrt{M\theta^2 (6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega])} \sin[\alpha]^2 \sin[t\omega]^2) \right) \tan[\alpha]} \right) \Bigg/ \\
& \left(2\sqrt{M\theta^2 (6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega])} \sin[\alpha]^2 \sin[t\omega]^2 \right) \Bigg) + \\
& \left(\left(-4M\theta + 2M\theta \cos[2t\omega] - M\theta \cos[2\alpha - 2t\omega] - M\theta \cos[2\alpha + 2t\omega] + 2M\theta \cos[\alpha - t\omega]^2 \right. \right. \\
& \left. \left. \sec[\alpha]^2 + 2M\theta \cos[2\alpha] \cos[\alpha - t\omega]^2 \sec[\alpha]^2 + 2M\theta \sec[\alpha]^2 \sin[t\omega]^2 + \right. \right. \\
& \left. \left. 2M\theta \cos[2\alpha] \sec[\alpha]^2 \sin[t\omega]^2 + 2\sqrt{2} \sqrt{-M\theta^2 (-6 - 2\cos[2\alpha] + 2\cos[2t\omega] - \cos[2\alpha - 2t\omega] - \cos[2\alpha + 2t\omega])} \sin[\alpha]^2 \sin[t\omega]^2) \right) \right. \\
& \left. \sqrt{\left(\frac{1}{1 + \cos[2\alpha]} (-2 + 4M\theta - 2\cos[2\alpha] - 2M\theta \cos[2t\omega] + M\theta \cos[2\alpha - 2t\omega] + \right. \right. \\
& \left. \left. M\theta \cos[2\alpha + 2t\omega] - 2\sqrt{2} \sqrt{M\theta^2 (6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega])} \sin[\alpha]^2 \sin[t\omega]^2) \right) \right) \Bigg/ \\
& \left(8\sqrt{M\theta^2 (6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega])} \sin[\alpha]^2 \sin[t\omega]^2 \right) + \\
& \left(\left(4M\theta - 2M\theta \cos[2t\omega] + M\theta \cos[2\alpha - 2t\omega] + M\theta \cos[2\alpha + 2t\omega] - \right. \right. \\
& \left. \left. 2M\theta \cos[\alpha - t\omega]^2 \sec[\alpha]^2 - 2M\theta \cos[2\alpha] \cos[\alpha - t\omega]^2 \sec[\alpha]^2 - 2M\theta \sec[\alpha]^2 \sin[t\omega]^2 - \right. \right. \\
& \left. \left. 2M\theta \cos[2\alpha] \sec[\alpha]^2 \sin[t\omega]^2 + 2\sqrt{2} \sqrt{-M\theta^2 (-6 - 2\cos[2\alpha] + 2\cos[2t\omega] - \cos[2\alpha - 2t\omega] - \cos[2\alpha + 2t\omega])} \sin[\alpha]^2 \sin[t\omega]^2) \right) \right. \\
& \left. \sqrt{\left(\frac{1}{1 + \cos[2\alpha]} (-2 + 4M\theta - 2\cos[2\alpha] - 2M\theta \cos[2t\omega] + M\theta \cos[2\alpha - 2t\omega] + \right. \right. \\
& \left. \left. M\theta \cos[2\alpha + 2t\omega] + 2\sqrt{2} \sqrt{M\theta^2 (6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega])} \sin[\alpha]^2 \sin[t\omega]^2) \right) \right) \Bigg/ \\
& \left(8\sqrt{M\theta^2 (6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega])} \sin[\alpha]^2 \sin[t\omega]^2 \right) \Bigg) \\
& \left(- \left(i M\theta \omega (1 + \cos[2\alpha]) \cos[t\omega] \sec[\alpha] \sin[t\omega] \sqrt{\left(\frac{1}{1 + \cos[2\alpha]} \right.} \right. \right.
\end{aligned}$$

$$\begin{aligned}
& \left(-2 + 4 M0 - 2 \cos[2 \alpha] - 2 M0 \cos[2 t \omega] + M0 \cos[2 \alpha - 2 t \omega] + \right. \\
& \quad \left. M0 \cos[2 \alpha + 2 t \omega] - 2 \sqrt{2} \sqrt{M0^2 (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \right.} \\
& \quad \left. \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega]^2} \right) \Big) \\
& \tan[\alpha] \Big) / \left(\sqrt{M0^2 (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \right.} \\
& \quad \left. \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega]^2} \right) \Big) + \\
& \left(\frac{1}{1 + \cos[2 \alpha]} \sqrt{M0 \omega (1 + \cos[2 \alpha]) \cos[t \omega] \sec[\alpha] \sin[t \omega]} \right. \\
& \quad \left(-2 + 4 M0 - 2 \cos[2 \alpha] - 2 M0 \cos[2 t \omega] + M0 \cos[2 \alpha - 2 t \omega] + \right. \\
& \quad \left. M0 \cos[2 \alpha + 2 t \omega] + 2 \sqrt{2} \sqrt{M0^2 (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \right.} \\
& \quad \left. \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega]^2} \right) \tan[\alpha] \Big) / \\
& \left(\sqrt{M0^2 (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega])} \right. \\
& \quad \left. \sin[\alpha]^2 \sin[t \omega]^2} \right) + \left(\frac{1}{1 + \cos[2 \alpha]} \sec[\alpha] \sin[t \omega]^2 \right. \\
& \quad \left. \sqrt{\left(\frac{1}{1 + \cos[2 \alpha]} \left(-2 + 4 M0 - 2 \cos[2 \alpha] - 2 M0 \cos[2 t \omega] + M0 \cos[2 \alpha - 2 t \omega] + \right. \right. \right. \\
& \quad \left. \left. M0 \cos[2 \alpha + 2 t \omega] - 2 \sqrt{2} \sqrt{M0^2 (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \right. \right.} \\
& \quad \left. \left. \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega]^2} \right) \right) \\
& \quad \left(2 M0^2 \omega \cos[t \omega] (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \right. \\
& \quad \left. \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega] + M0^2 \sin[\alpha]^2 \sin[t \omega]^2 \right. \\
& \quad \left. (4 \omega \sin[2 t \omega] + 2 \omega \sin[2 \alpha - 2 t \omega] - 2 \omega \sin[2 \alpha + 2 t \omega]) \right) \tan[\alpha] \Big) / \\
& \left(4 (M0^2 (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega]) \right. \\
& \quad \left. \sin[\alpha]^2 \sin[t \omega]^2)^{3/2} - \left(\frac{1}{1 + \cos[2 \alpha]} \sec[\alpha] \sin[t \omega]^2 \right. \right. \\
& \quad \left. \sqrt{\left(\frac{1}{1 + \cos[2 \alpha]} \left(-2 + 4 M0 - 2 \cos[2 \alpha] - 2 M0 \cos[2 t \omega] + M0 \cos[2 \alpha - 2 t \omega] + \right. \right. \right. \\
& \quad \left. \left. M0 \cos[2 \alpha + 2 t \omega] + 2 \sqrt{2} \sqrt{M0^2 (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \right. \right.} \\
& \quad \left. \left. \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega]^2} \right) \right) \\
& \quad \left(2 M0^2 \omega \cos[t \omega] (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \right. \\
& \quad \left. \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega] + M0^2 \sin[\alpha]^2 \sin[t \omega]^2 \right. \\
& \quad \left. (4 \omega \sin[2 t \omega] + 2 \omega \sin[2 \alpha - 2 t \omega] - 2 \omega \sin[2 \alpha + 2 t \omega]) \right) \tan[\alpha] \Big) / \\
& \left(4 (M0^2 (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega]) \right. \\
& \quad \left. \sin[\alpha]^2 \sin[t \omega]^2)^{3/2} - \right. \\
& \left(\frac{1}{1 + \cos[2 \alpha]} \sec[\alpha] \sin[t \omega]^2 \right) \left(4 M0 \omega \sin[2 t \omega] + 2 M0 \omega \sin[2 \alpha - 2 t \omega] - \right. \\
& \quad \left. 2 M0 \omega \sin[2 \alpha + 2 t \omega] - \left(\sqrt{2} (2 M0^2 \omega \cos[t \omega] (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \right. \right. \right.
\end{aligned}$$

$$\begin{aligned}
& \frac{\cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega]}{\sin[t\omega]^2} \sin[\alpha]^2 \sin[t\omega] + M\theta^2 \sin[\alpha]^2 \\
& \sin[t\omega]^2 (4\omega \sin[2t\omega] + 2\omega \sin[2\alpha - 2t\omega] - 2\omega \sin[2\alpha + 2t\omega]) \Big) \Big/ \\
& \left(\sqrt{M\theta^2 (6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega])} \sin[\alpha]^2 \sin[t\omega]^2) \right) \tan[\alpha] \Big) \Big/ \\
& \left(4 \sqrt{M\theta^2 (6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega])} \right. \\
& \sin[\alpha]^2 \sin[t\omega]^2) \sqrt{\left(\frac{1}{1 + \cos[2\alpha]} (-2 + 4M\theta - 2\cos[2\alpha] - 2M\theta \cos[2t\omega] + \right.} \\
& M\theta \cos[2\alpha - 2t\omega] + M\theta \cos[2\alpha + 2t\omega] - 2\sqrt{2} \sqrt{M\theta^2 (6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega])} \sin[\alpha]^2 \sin[t\omega]^2) \Big) \Big) \Big) + \\
& \left(i M\theta \sec[\alpha] \sin[t\omega]^2 (4M\theta \omega \sin[2t\omega] + 2M\theta \omega \sin[2\alpha - 2t\omega] - 2M\theta \omega \sin[2\alpha + 2t\omega] + \right. \\
& \left. \sqrt{2} (2M\theta^2 \omega \cos[t\omega] (6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega] + M\theta^2 \sin[\alpha]^2 \right. \\
& \sin[t\omega]^2 (4\omega \sin[2t\omega] + 2\omega \sin[2\alpha - 2t\omega] - 2\omega \sin[2\alpha + 2t\omega]) \Big) \Big) \Big/ \\
& \left(\sqrt{M\theta^2 (6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega])} \sin[\alpha]^2 \sin[t\omega]^2) \right) \tan[\alpha] \Big) \Big/ \\
& \left(4 \sqrt{M\theta^2 (6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega])} \right. \\
& \sin[\alpha]^2 \sin[t\omega]^2) \sqrt{\left(\frac{1}{1 + \cos[2\alpha]} (-2 + 4M\theta - 2\cos[2\alpha] - 2M\theta \cos[2t\omega] + M\theta \cos[2\alpha - 2t\omega] + \right.} \\
& M\theta \cos[2\alpha + 2t\omega] + 2\sqrt{2} \sqrt{M\theta^2 (6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega])} \sin[\alpha]^2 \sin[t\omega]^2) \Big) \Big) \Big) \Big) \Big) - \\
& \frac{1}{M\theta} 2 i \sec[\alpha] \sin[t\omega]^2 \tan[\alpha] \left(e^{-i\theta} r + \left(\left(i \cos[\alpha] \cot[\alpha] \csc[t\omega]^2 \right. \right. \right. \\
& \left. \left. \left. (-4M\theta + 2M\theta \cos[2t\omega] - M\theta \cos[2\alpha - 2t\omega] - M\theta \cos[2\alpha + 2t\omega] + \right. \right. \right. \\
& 2M\theta \cos[\alpha - t\omega]^2 \sec[\alpha]^2 + 2M\theta \cos[2\alpha] \cos[\alpha - t\omega]^2 \sec[\alpha]^2 + \\
& 2M\theta \sec[\alpha]^2 \sin[t\omega]^2 + 2M\theta \cos[2\alpha] \sec[\alpha]^2 \sin[t\omega]^2 + \\
& 2\sqrt{2} \sqrt{-M\theta^2 (-6 - 2\cos[2\alpha] + 2\cos[2t\omega] - \cos[2\alpha - 2t\omega] - \cos[2\alpha + 2t\omega])} \sin[\alpha]^2 \sin[t\omega]^2) \Big) \Big) \Big) \\
& \sqrt{\left(\frac{1}{1 + \cos[2\alpha]} (-2 + 4M\theta - 2\cos[2\alpha] - 2M\theta \cos[2t\omega] + M\theta \cos[2\alpha - 2t\omega] + \right.} \\
& M\theta \cos[2\alpha + 2t\omega] - 2\sqrt{2} \sqrt{M\theta^2 (6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega])} \sin[\alpha]^2 \sin[t\omega]^2) \Big) \Big) \Big) \Big) \\
& \left(4M\theta - 2M\theta \cos[2t\omega] + M\theta \cos[2\alpha - 2t\omega] + M\theta \cos[2\alpha + 2t\omega] - \right. \\
& 2M\theta \cos[\alpha - t\omega]^2 \sec[\alpha]^2 - 2M\theta \cos[2\alpha] \cos[\alpha - t\omega]^2 \sec[\alpha]^2 - \\
& 2M\theta \sec[\alpha]^2 \sin[t\omega]^2 - 2M\theta \cos[2\alpha] \sec[\alpha]^2 \sin[t\omega]^2 + \\
& 2\sqrt{2} \sqrt{M\theta^2 (6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega])} \sin[\alpha]^2 \sin[t\omega]^2) \Big) \Big) \Big)
\end{aligned}$$

$$\begin{aligned}
& \left. \left. \left. \cos[2\alpha + 2t\omega] \sin[\alpha]^2 \sin[t\omega]^2 \right) \right) \right) / \\
& \left(32 M0 (1 + \cos[2\alpha]) \sqrt{M0^2 (6 + 2 \cos[2\alpha] - 2 \cos[2t\omega] + \cos[2\alpha - 2t\omega] + \right. \\
& \quad \left. \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2)} - \right. \\
& \left(i \cos[\alpha] \cot[\alpha] \csc[t\omega]^2 (4 M0 - 2 M0 \cos[2t\omega] + M0 \cos[2\alpha - 2t\omega] + \right. \\
& \quad M0 \cos[2\alpha + 2t\omega] - 2 M0 \cos[\alpha - t\omega]^2 \sec[\alpha]^2 - \\
& \quad 2 M0 \cos[2\alpha] \cos[\alpha - t\omega]^2 \sec[\alpha]^2 - 2 M0 \sec[\alpha]^2 \sin[t\omega]^2 - \\
& \quad 2 M0 \cos[2\alpha] \sec[\alpha]^2 \sin[t\omega]^2 + 2 \sqrt{2} \sqrt{(-M0^2 (-6 - 2 \cos[2\alpha] + \\
& \quad 2 \cos[2t\omega] - \cos[2\alpha - 2t\omega] - \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2)} \left. \right) \\
& \sqrt{\left(\frac{1}{1 + \cos[2\alpha]} (-2 + 4 M0 - 2 \cos[2\alpha] - 2 M0 \cos[2t\omega] + M0 \cos[2\alpha - 2t\omega] + \right. \\
& \quad M0 \cos[2\alpha + 2t\omega] + 2 \sqrt{2} \sqrt{M0^2 (6 + 2 \cos[2\alpha] - 2 \cos[2t\omega] + \\
& \quad \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2)} \left. \right) \left(\right. \\
& \quad (-4 M0 + 2 M0 \cos[2t\omega] - M0 \cos[2\alpha - 2t\omega] - M0 \cos[2\alpha + 2t\omega] + \\
& \quad 2 M0 \cos[\alpha - t\omega]^2 \sec[\alpha]^2 + 2 M0 \cos[2\alpha] \cos[\alpha - t\omega]^2 \sec[\alpha]^2 + \\
& \quad 2 M0 \sec[\alpha]^2 \sin[t\omega]^2 + 2 M0 \cos[2\alpha] \sec[\alpha]^2 \sin[t\omega]^2 + \\
& \quad 2 \sqrt{2} \sqrt{M0^2 (6 + 2 \cos[2\alpha] - 2 \cos[2t\omega] + \cos[2\alpha - 2t\omega] + \\
& \quad \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2)} \left. \right) \left. \right) / \\
& \left(32 M0 (1 + \cos[2\alpha]) \sqrt{M0^2 (6 + 2 \cos[2\alpha] - 2 \cos[2t\omega] + \cos[2\alpha - 2t\omega] + \right. \\
& \quad \left. \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2)} \right) \left. \right) \\
& \left(s \left(\left(\sqrt{\left(\frac{1}{1 + \cos[2\alpha]} (-2 + 4 M0 - 2 \cos[2\alpha] - 2 M0 \cos[2t\omega] + M0 \cos[2\alpha - 2t\omega] + \right. \right. \right. \right. \\
& \quad \left. \left. \left. M0 \cos[2\alpha + 2t\omega] - 2 \sqrt{2} \sqrt{M0^2 (6 + 2 \cos[2\alpha] - 2 \cos[2t\omega] + \right. \right. \right. \right. \\
& \quad \left. \left. \left. \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2)} \right) \right) \right) \left(\right. \\
& \quad (4 M0 - 2 M0 \cos[2t\omega] + M0 \cos[2\alpha - 2t\omega] + M0 \cos[2\alpha + 2t\omega] - \\
& \quad 2 M0 \cos[\alpha - t\omega]^2 \sec[\alpha]^2 - 2 M0 \cos[2\alpha] \cos[\alpha - t\omega]^2 \sec[\alpha]^2 - \\
& \quad 2 M0 \sec[\alpha]^2 \sin[t\omega]^2 - 2 M0 \cos[2\alpha] \sec[\alpha]^2 \sin[t\omega]^2 + \\
& \quad 2 \sqrt{2} \sqrt{M0^2 (6 + 2 \cos[2\alpha] - 2 \cos[2t\omega] + \cos[2\alpha - 2t\omega] + \\
& \quad \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2)} \left. \right) \left. \right) / \\
& \left(8 \sqrt{M0^2 (6 + 2 \cos[2\alpha] - 2 \cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega]) \right. \\
& \quad \left. \sin[\alpha]^2 \sin[t\omega]^2)} \right) + \\
& \left(\sqrt{\left(\frac{1}{1 + \cos[2\alpha]} (-2 + 4 M0 - 2 \cos[2\alpha] - 2 M0 \cos[2t\omega] + M0 \cos[2\alpha - 2t\omega] + \right. \right. \\
& \quad M0 \cos[2\alpha + 2t\omega] + 2 \sqrt{2} \sqrt{M0^2 (6 + 2 \cos[2\alpha] - 2 \cos[2t\omega] + \\
& \quad \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2)} \left. \right) \left(\right. \\
& \quad (-4 M0 + 2 M0 \cos[2t\omega] - M0 \cos[2\alpha - 2t\omega] - M0 \cos[2\alpha + 2t\omega] + \\
& \quad 2 M0 \cos[\alpha - t\omega]^2 \sec[\alpha]^2 + 2 M0 \cos[2\alpha] \cos[\alpha - t\omega]^2 \sec[\alpha]^2 +
\end{aligned}$$

$$\begin{aligned}
& 2 M0 \operatorname{Sec}[\alpha]^2 \sin[t \omega]^2 + 2 M0 \cos[2 \alpha] \operatorname{Sec}[\alpha]^2 \sin[t \omega]^2 + \\
& 2 \sqrt{2} \sqrt{\left(M0^2 (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \right. \\
& \left. \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega]^2)\right)} \Bigg) / \\
& \left(8 \sqrt{\left(M0^2 (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega] \right. \right. \\
& \left. \left. \sin[\alpha]^2 \sin[t \omega]^2)\right)}\right) + \\
& e^{i \theta} r \left(- \left(\left(i M0 (1 + \cos[2 \alpha]) \operatorname{Sec}[\alpha] \sin[t \omega]^2 \sqrt{\left(\frac{1}{1 + \cos[2 \alpha]} (-2 + 4 M0 - \right. \right. \right. \right. \\
& \left. \left. \left. 2 \cos[2 \alpha] - 2 M0 \cos[2 t \omega] + M0 \cos[2 \alpha - 2 t \omega] + M0 \cos[2 \alpha + 2 t \omega] - \right. \right. \right. \right. \\
& \left. \left. \left. 2 \sqrt{2} \sqrt{\left(M0^2 (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \right. \right. \right. \right. \right. \\
& \left. \left. \left. \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega]^2)\right)}\right)} \tan[\alpha] \right) \Bigg) / \\
& \left(2 \sqrt{\left(M0^2 (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega] \right. \right. \\
& \left. \left. \sin[\alpha]^2 \sin[t \omega]^2)\right)}\right) + \left(i M0 (1 + \cos[2 \alpha]) \operatorname{Sec}[\alpha] \sin[t \omega]^2 \right. \\
& \left. \sqrt{\left(\frac{1}{1 + \cos[2 \alpha]} (-2 + 4 M0 - 2 \cos[2 \alpha] - 2 M0 \cos[2 t \omega] + M0 \cos[2 \alpha - 2 t \omega] + \right. \right. \right. \\
& \left. \left. \left. M0 \cos[2 \alpha + 2 t \omega] + 2 \sqrt{2} \sqrt{\left(M0^2 (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \right. \right. \right. \right. \right. \\
& \left. \left. \left. \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega]^2)\right)}\right)} \tan[\alpha] \right) \Bigg) / \\
& \left(2 \sqrt{\left(M0^2 (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega] \right. \right. \\
& \left. \left. \sin[\alpha]^2 \sin[t \omega]^2)\right)}\right) + \\
& \left(\left(\sqrt{\left(\frac{1}{1 + \cos[2 \alpha]} (-2 + 4 M0 - 2 \cos[2 \alpha] - 2 M0 \cos[2 t \omega] + M0 \cos[2 \alpha - 2 t \omega] + \right. \right. \right. \right. \\
& \left. \left. \left. M0 \cos[2 \alpha + 2 t \omega] - 2 \sqrt{2} \sqrt{\left(M0^2 (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \right. \right. \right. \right. \right. \\
& \left. \left. \left. \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega]^2)\right)}\right)} \right) \Bigg) \\
& \left(4 M0 - 2 M0 \cos[2 t \omega] + M0 \cos[2 \alpha - 2 t \omega] + M0 \cos[2 \alpha + 2 t \omega] - \right. \\
& 2 M0 \cos[\alpha - t \omega]^2 \operatorname{Sec}[\alpha]^2 - 2 M0 \cos[2 \alpha] \cos[\alpha - t \omega]^2 \operatorname{Sec}[\alpha]^2 - \\
& 2 M0 \operatorname{Sec}[\alpha]^2 \sin[t \omega]^2 - 2 M0 \cos[2 \alpha] \operatorname{Sec}[\alpha]^2 \sin[t \omega]^2 + \\
& 2 \sqrt{2} \sqrt{\left(M0^2 (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \right. \\
& \left. \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega]^2)\right)} \Bigg) / \\
& \left(8 \sqrt{\left(M0^2 (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega] \right. \right. \\
& \left. \left. \sin[\alpha]^2 \sin[t \omega]^2)\right)}\right) + \\
& \left(\sqrt{\left(\frac{1}{1 + \cos[2 \alpha]} (-2 + 4 M0 - 2 \cos[2 \alpha] - 2 M0 \cos[2 t \omega] + M0 \cos[2 \alpha - 2 t \omega] + \right. \right. \right. \\
& \left. \left. \left. M0 \cos[2 \alpha + 2 t \omega] + 2 \sqrt{2} \sqrt{\left(M0^2 (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \right. \right. \right. \right. \right. \\
& \left. \left. \left. \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega]^2)\right)}\right)} \right) \Bigg) \\
& \left(-4 M0 + 2 M0 \cos[2 t \omega] - M0 \cos[2 \alpha - 2 t \omega] - M0 \cos[2 \alpha + 2 t \omega] + \right.
\end{aligned}$$

$$\begin{aligned}
& 2 M \theta \cos [\alpha - t \omega]^2 \sec [\alpha]^2 + 2 M \theta \cos [2 \alpha] \cos [\alpha - t \omega]^2 \sec [\alpha]^2 + \\
& 2 M \theta \sec [\alpha]^2 \sin [t \omega]^2 + 2 M \theta \cos [2 \alpha] \sec [\alpha]^2 \sin [t \omega]^2 + \\
& 2 \sqrt{2} \sqrt{\left(M \theta^2 (6 + 2 \cos [2 \alpha] - 2 \cos [2 t \omega] + \cos [2 \alpha - 2 t \omega] + \right. \\
& \quad \left. \cos [2 \alpha + 2 t \omega]) \sin [\alpha]^2 \sin [t \omega]^2 \right)} \Big) \Big) / \\
& \left(8 \sqrt{\left(M \theta^2 (6 + 2 \cos [2 \alpha] - 2 \cos [2 t \omega] + \cos [2 \alpha - 2 t \omega] + \cos [2 \alpha + 2 t \omega]) \right. \right. \\
& \quad \left. \left. \sin [\alpha]^2 \sin [t \omega]^2 \right)} \right) \Big) \\
& \left(e^{-i \theta} r \left(\left(\sqrt{\left(\frac{1}{1 + \cos [2 \alpha]} \left(-2 + 4 M \theta - 2 \cos [2 \alpha] - 2 M \theta \cos [2 t \omega] + M \theta \cos [2 \alpha - 2 t \omega] + \right. \right. \right. \right. \right. \\
& \quad \left. \left. \left. M \theta \cos [2 \alpha + 2 t \omega] - 2 \sqrt{2} \sqrt{\left(M \theta^2 (6 + 2 \cos [2 \alpha] - 2 \cos [2 t \omega] + \right. \right. \right. \right. \right. \\
& \quad \left. \left. \left. \cos [2 \alpha - 2 t \omega] + \cos [2 \alpha + 2 t \omega]) \sin [\alpha]^2 \sin [t \omega]^2 \right)} \right)} \right) \right) \right. \\
& \quad \left(4 M \theta - 2 M \theta \cos [2 t \omega] + M \theta \cos [2 \alpha - 2 t \omega] + M \theta \cos [2 \alpha + 2 t \omega] - \right. \\
& \quad \left. 2 M \theta \cos [\alpha - t \omega]^2 \sec [\alpha]^2 - 2 M \theta \cos [2 \alpha] \cos [\alpha - t \omega]^2 \sec [\alpha]^2 - 2 M \theta \sec [\alpha]^2 \right. \\
& \quad \left. \sin [t \omega]^2 - 2 M \theta \cos [2 \alpha] \sec [\alpha]^2 \sin [t \omega]^2 + 2 \sqrt{2} \sqrt{\left(M \theta^2 (6 + 2 \cos [2 \alpha] - \right. \right. \\
& \quad \left. \left. 2 \cos [2 t \omega] + \cos [2 \alpha - 2 t \omega] + \cos [2 \alpha + 2 t \omega]) \sin [\alpha]^2 \sin [t \omega]^2 \right)} \right) \Big) \Big) / \\
& \left(8 \sqrt{\left(M \theta^2 (6 + 2 \cos [2 \alpha] - 2 \cos [2 t \omega] + \cos [2 \alpha - 2 t \omega] + \cos [2 \alpha + 2 t \omega]) \right. \right. \\
& \quad \left. \left. \sin [\alpha]^2 \sin [t \omega]^2 \right)} \right) + \\
& \left(\sqrt{\left(\frac{1}{1 + \cos [2 \alpha]} \left(-2 + 4 M \theta - 2 \cos [2 \alpha] - 2 M \theta \cos [2 t \omega] + M \theta \cos [2 \alpha - 2 t \omega] + \right. \right. \right. \right. \\
& \quad \left. \left. \left. M \theta \cos [2 \alpha + 2 t \omega] + 2 \sqrt{2} \sqrt{\left(M \theta^2 (6 + 2 \cos [2 \alpha] - 2 \cos [2 t \omega] + \right. \right. \right. \right. \right. \\
& \quad \left. \left. \left. \cos [2 \alpha - 2 t \omega] + \cos [2 \alpha + 2 t \omega]) \sin [\alpha]^2 \sin [t \omega]^2 \right)} \right)} \right) \Big) \Big) \\
& \quad \left(-4 M \theta + 2 M \theta \cos [2 t \omega] - M \theta \cos [2 \alpha - 2 t \omega] - M \theta \cos [2 \alpha + 2 t \omega] + \right. \\
& \quad \left. 2 M \theta \cos [\alpha - t \omega]^2 \sec [\alpha]^2 + 2 M \theta \cos [2 \alpha] \cos [\alpha - t \omega]^2 \sec [\alpha]^2 + 2 M \theta \sec [\alpha]^2 \right. \\
& \quad \left. \sin [t \omega]^2 + 2 M \theta \cos [2 \alpha] \sec [\alpha]^2 \sin [t \omega]^2 + 2 \sqrt{2} \sqrt{\left(M \theta^2 (6 + 2 \cos [2 \alpha] - \right. \right. \\
& \quad \left. \left. 2 \cos [2 t \omega] + \cos [2 \alpha - 2 t \omega] + \cos [2 \alpha + 2 t \omega]) \sin [\alpha]^2 \sin [t \omega]^2 \right)} \right) \Big) \Big) / \\
& \left(8 \sqrt{\left(M \theta^2 (6 + 2 \cos [2 \alpha] - 2 \cos [2 t \omega] + \cos [2 \alpha - 2 t \omega] + \cos [2 \alpha + 2 t \omega]) \right. \right. \\
& \quad \left. \left. \sin [\alpha]^2 \sin [t \omega]^2 \right)} \right) + \\
& s \left(- \left(\left(i M \theta (1 + \cos [2 \alpha]) \sec [\alpha] \sin [t \omega]^2 \sqrt{\left(\frac{1}{1 + \cos [2 \alpha]} \left(-2 + 4 M \theta - \right. \right. \right. \right. \right. \right. \right. \\
& \quad \left. \left. \left. 2 \cos [2 \alpha] - 2 M \theta \cos [2 t \omega] + M \theta \cos [2 \alpha - 2 t \omega] + M \theta \cos [2 \alpha + 2 t \omega] - \right. \right. \right. \\
& \quad \left. \left. \left. 2 \sqrt{2} \sqrt{\left(M \theta^2 (6 + 2 \cos [2 \alpha] - 2 \cos [2 t \omega] + \cos [2 \alpha - 2 t \omega] + \right. \right. \right. \right. \right. \\
& \quad \left. \left. \left. \cos [2 \alpha + 2 t \omega]) \sin [\alpha]^2 \sin [t \omega]^2 \right)} \right)} \right) \right) \tan [\alpha] \Big) \Big) / \\
& \left(2 \sqrt{\left(M \theta^2 (6 + 2 \cos [2 \alpha] - 2 \cos [2 t \omega] + \cos [2 \alpha - 2 t \omega] + \cos [2 \alpha + 2 t \omega]) \right. \right. \\
& \quad \left. \left. \sin [\alpha]^2 \sin [t \omega]^2 \right)} \right) + \left(i M \theta (1 + \cos [2 \alpha]) \sec [\alpha] \sin [t \omega]^2 \right)
\end{aligned}$$

$$\begin{aligned}
& \sqrt{\left(\frac{1}{1 + \cos[2\alpha]} \left(-2 + 4M\theta - 2\cos[2\alpha] - 2M\theta\cos[2t\omega] + M\theta\cos[2\alpha - 2t\omega] + \right. \right. \\
& \quad \left. \left. M\theta\cos[2\alpha + 2t\omega] + 2\sqrt{2}\sqrt{M\theta^2(6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \right. \right. \\
& \quad \left. \left. \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega])\sin[\alpha]^2\sin[t\omega]^2) \right) \right) \tan[\alpha] \Bigg) / \\
& \left(2\sqrt{M\theta^2(6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega])} \right. \\
& \quad \left. \sin[\alpha]^2\sin[t\omega]^2) \right) \Bigg) + \\
& i \left(\left(\left(\sqrt{\left(\frac{1}{1 + \cos[2\alpha]} \left(-2 + 4M\theta - 2\cos[2\alpha] - 2M\theta\cos[2t\omega] + M\theta\cos[2\alpha - 2t\omega] + \right. \right. \right. \right. \right. \\
& \quad \left. \left. \left. M\theta\cos[2\alpha + 2t\omega] - 2\sqrt{2}\sqrt{M\theta^2(6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \right. \right. \right. \right. \\
& \quad \left. \left. \left. \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega])\sin[\alpha]^2\sin[t\omega]^2) \right) \right) \right) \right. \\
& \quad \left(4M\theta - 2M\theta\cos[2t\omega] + M\theta\cos[2\alpha - 2t\omega] + M\theta\cos[2\alpha + 2t\omega] - \right. \\
& \quad 2M\theta\cos[\alpha - t\omega]^2\sec[\alpha]^2 - 2M\theta\cos[2\alpha]\cos[\alpha - t\omega]^2\sec[\alpha]^2 - \\
& \quad 2M\theta\sec[\alpha]^2\sin[t\omega]^2 - 2M\theta\cos[2\alpha]\sec[\alpha]^2\sin[t\omega]^2 + \\
& \quad 2\sqrt{2}\sqrt{M\theta^2(6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \\
& \quad \left. \cos[2\alpha + 2t\omega])\sin[\alpha]^2\sin[t\omega]^2) \right) \Bigg) / \\
& \left(8\sqrt{M\theta^2(6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega])} \right. \\
& \quad \left. \sin[\alpha]^2\sin[t\omega]^2) \right) + \\
& \left(\sqrt{\left(\frac{1}{1 + \cos[2\alpha]} \left(-2 + 4M\theta - 2\cos[2\alpha] - 2M\theta\cos[2t\omega] + M\theta\cos[2\alpha - 2t\omega] + \right. \right. \right. \\
& \quad \left. \left. \left. M\theta\cos[2\alpha + 2t\omega] + 2\sqrt{2}\sqrt{M\theta^2(6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \right. \right. \right. \\
& \quad \left. \left. \left. \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega])\sin[\alpha]^2\sin[t\omega]^2) \right) \right) \right) \Bigg) \\
& \quad \left(-4M\theta + 2M\theta\cos[2t\omega] - M\theta\cos[2\alpha - 2t\omega] - M\theta\cos[2\alpha + 2t\omega] + \right. \\
& \quad 2M\theta\cos[\alpha - t\omega]^2\sec[\alpha]^2 + 2M\theta\cos[2\alpha]\cos[\alpha - t\omega]^2\sec[\alpha]^2 + \\
& \quad 2M\theta\sec[\alpha]^2\sin[t\omega]^2 + 2M\theta\cos[2\alpha]\sec[\alpha]^2\sin[t\omega]^2 + \\
& \quad 2\sqrt{2}\sqrt{M\theta^2(6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \\
& \quad \left. \cos[2\alpha + 2t\omega])\sin[\alpha]^2\sin[t\omega]^2) \right) \Bigg) / \\
& \left(8\sqrt{M\theta^2(6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega])} \right. \\
& \quad \left. \sin[\alpha]^2\sin[t\omega]^2) \right) \Bigg) \\
& \left(- \left(\left(\sqrt{\left(\frac{1}{1 + \cos[2\alpha]} \left(-2 + 4M\theta - 2\cos[2\alpha] - 2M\theta\cos[2t\omega] + M\theta\cos[2\alpha - 2t\omega] + \right. \right. \right. \right. \right. \right. \\
& \quad \left. \left. \left. M\theta\cos[2\alpha + 2t\omega] - 2\sqrt{2}\sqrt{M\theta^2(6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \right. \right. \right. \\
& \quad \left. \left. \left. \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega])\sin[\alpha]^2\sin[t\omega]^2) \right) \right) \right) \right) \Bigg) \\
& \quad \left(4M\theta - 2M\theta\cos[2t\omega] + M\theta\cos[2\alpha - 2t\omega] + M\theta\cos[2\alpha + 2t\omega] - \right. \\
& \quad 2M\theta\cos[\alpha - t\omega]^2\sec[\alpha]^2 - 2M\theta\cos[2\alpha]\cos[\alpha - t\omega]^2\sec[\alpha]^2 - 2M\theta\sec[\alpha]^2 \\
& \quad \sin[t\omega]^2 - 2M\theta\cos[2\alpha]\sec[\alpha]^2\sin[t\omega]^2 + 2\sqrt{2}\sqrt{M\theta^2(6 + 2\cos[2\alpha] - }
\end{aligned}$$

$$\begin{aligned}
& \left(2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega] \right) \sin[\alpha]^2 \sin[t \omega]^2 \Big) \\
& \left(2 M \omega^2 \cos[t \omega] \left(6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \right. \right. \\
& \quad \left. \left. \cos[2 \alpha + 2 t \omega] \right) \sin[\alpha]^2 \sin[t \omega] + M \omega^2 \sin[\alpha]^2 \sin[t \omega]^2 \right. \\
& \quad \left. \left(4 \omega \sin[2 t \omega] + 2 \omega \sin[2 \alpha - 2 t \omega] - 2 \omega \sin[2 \alpha + 2 t \omega] \right) \right) \Big) / \\
& \left(16 \left(M \omega^2 \left(6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega] \right) \right. \right. \\
& \quad \left. \left. \sin[\alpha]^2 \sin[t \omega]^2 \right)^{3/2} \right) \Big) - \\
& \left(\sqrt{\left(\frac{1}{1 + \cos[2 \alpha]} \left(-2 + 4 M \omega - 2 \cos[2 \alpha] - 2 M \omega \cos[2 t \omega] + M \omega \cos[2 \alpha - 2 t \omega] + \right. \right. \right. \\
& \quad \left. \left. M \omega \cos[2 \alpha + 2 t \omega] + 2 \sqrt{2} \sqrt{\left(M \omega^2 \left(6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \right. \right. \right. \right. \\
& \quad \left. \left. \left. \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega] \right) \sin[\alpha]^2 \sin[t \omega]^2 \right) \right) \right) \right) \\
& \left(-4 M \omega + 2 M \omega \cos[2 t \omega] - M \omega \cos[2 \alpha - 2 t \omega] - M \omega \cos[2 \alpha + 2 t \omega] + \right. \\
& \quad 2 M \omega \cos[\alpha - t \omega]^2 \sec[\alpha]^2 + 2 M \omega \cos[2 \alpha] \cos[\alpha - t \omega]^2 \sec[\alpha]^2 + \\
& \quad 2 M \omega \sec[\alpha]^2 \sin[t \omega]^2 + 2 M \omega \cos[2 \alpha] \sec[\alpha]^2 \sin[t \omega]^2 + \\
& \quad 2 \sqrt{2} \sqrt{\left(M \omega^2 \left(6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega] \right) \right.} \\
& \quad \left. \sin[\alpha]^2 \sin[t \omega]^2 \right) \left(2 M \omega^2 \cos[t \omega] \left(6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \right. \right. \\
& \quad \left. \left. \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega] \right) \sin[\alpha]^2 \sin[t \omega] + M \omega^2 \sin[\alpha]^2 \right. \\
& \quad \left. \sin[t \omega]^2 \left(4 \omega \sin[2 t \omega] + 2 \omega \sin[2 \alpha - 2 t \omega] - 2 \omega \sin[2 \alpha + 2 t \omega] \right) \right) \Big) \Big) / \\
& \left(16 \left(M \omega^2 \left(6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega] \right) \right. \right. \\
& \quad \left. \left. \sin[\alpha]^2 \sin[t \omega]^2 \right)^{3/2} \right) + \\
& \left(\left(4 M \omega - 2 M \omega \cos[2 t \omega] + M \omega \cos[2 \alpha - 2 t \omega] + M \omega \cos[2 \alpha + 2 t \omega] - \right. \right. \\
& \quad 2 M \omega \cos[\alpha - t \omega]^2 \sec[\alpha]^2 - 2 M \omega \cos[2 \alpha] \cos[\alpha - t \omega]^2 \sec[\alpha]^2 - 2 M \omega \sec[\alpha]^2 \\
& \quad \sin[t \omega]^2 - 2 M \omega \cos[2 \alpha] \sec[\alpha]^2 \sin[t \omega]^2 + 2 \sqrt{2} \sqrt{\left(M \omega^2 \left(6 + 2 \cos[2 \alpha] - \right. \right.} \\
& \quad \left. \left. 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega] \right) \sin[\alpha]^2 \sin[t \omega]^2 \right) \Big) \\
& \left(4 M \omega \sin[2 t \omega] + 2 M \omega \sin[2 \alpha - 2 t \omega] - 2 M \omega \sin[2 \alpha + 2 t \omega] - \right. \\
& \quad \left(\sqrt{2} \left(2 M \omega^2 \cos[t \omega] \left(6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \right. \right. \right. \\
& \quad \left. \left. \cos[2 \alpha + 2 t \omega] \right) \sin[\alpha]^2 \sin[t \omega] + M \omega^2 \sin[\alpha]^2 \sin[t \omega]^2 \right. \\
& \quad \left. \left(4 \omega \sin[2 t \omega] + 2 \omega \sin[2 \alpha - 2 t \omega] - 2 \omega \sin[2 \alpha + 2 t \omega] \right) \right) \Big) \Big) / \\
& \left(\sqrt{\left(M \omega^2 \left(6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \right. \right. \right. \\
& \quad \left. \left. \cos[2 \alpha + 2 t \omega] \right) \sin[\alpha]^2 \sin[t \omega]^2 \right) \Big) \Big) \Big) / \\
& \left(16 \left(1 + \cos[2 \alpha] \right) \sqrt{\left(M \omega^2 \left(6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \right. \right. \right. \\
& \quad \left. \left. \cos[2 \alpha + 2 t \omega] \right) \sin[\alpha]^2 \sin[t \omega]^2 \right) \Big) \\
& \sqrt{\left(\frac{1}{1 + \cos[2 \alpha]} \left(-2 + 4 M \omega - 2 \cos[2 \alpha] - 2 M \omega \cos[2 t \omega] + M \omega \cos[2 \alpha - 2 t \omega] + \right. \right. \right. \\
& \quad \left. \left. M \omega \cos[2 \alpha + 2 t \omega] - 2 \sqrt{2} \sqrt{\left(M \omega^2 \left(6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \right. \right. \right. \right. \\
& \quad \left. \left. \left. \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega] \right) \sin[\alpha]^2 \sin[t \omega]^2 \right) \right) \right) \Big) \Big) +
\end{aligned}$$

$$\begin{aligned}
& \left(\left(-4 M0 + 2 M0 \cos[2 t \omega] - M0 \cos[2 \alpha - 2 t \omega] - M0 \cos[2 \alpha + 2 t \omega] + \right. \right. \\
& \quad 2 M0 \cos[\alpha - t \omega]^2 \sec[\alpha]^2 + 2 M0 \cos[2 \alpha] \cos[\alpha - t \omega]^2 \sec[\alpha]^2 + 2 M0 \sec[\alpha]^2 \\
& \quad \sin[t \omega]^2 + 2 M0 \cos[2 \alpha] \sec[\alpha]^2 \sin[t \omega]^2 + 2 \sqrt{2} \sqrt{M0^2 (6 + 2 \cos[2 \alpha] - \\
& \quad 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega]^2} \left. \right) \\
& \left(4 M0 \omega \sin[2 t \omega] + 2 M0 \omega \sin[2 \alpha - 2 t \omega] - 2 M0 \omega \sin[2 \alpha + 2 t \omega] + \right. \\
& \quad \left(\sqrt{2} (2 M0^2 \omega \cos[t \omega] (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \right. \\
& \quad \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega] + M0^2 \sin[\alpha]^2 \sin[t \omega]^2 \\
& \quad (4 \omega \sin[2 t \omega] + 2 \omega \sin[2 \alpha - 2 t \omega] - 2 \omega \sin[2 \alpha + 2 t \omega])) \left. \right) \left. \right) / \\
& \left(\sqrt{M0^2 (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \right. \\
& \quad \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega]^2} \left. \right) \left. \right) / \\
& \left(16 (1 + \cos[2 \alpha]) \sqrt{M0^2 (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \right. \\
& \quad \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega]^2} \right) \\
& \sqrt{\left(\frac{1}{1 + \cos[2 \alpha]} (-2 + 4 M0 - 2 \cos[2 \alpha] - 2 M0 \cos[2 t \omega] + M0 \cos[2 \alpha - 2 t \omega] + \right. \\
& \quad M0 \cos[2 \alpha + 2 t \omega] + 2 \sqrt{2} \sqrt{M0^2 (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \right. \\
& \quad \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega]^2} \left. \right) \left. \right) + \\
& \left(\sqrt{\left(\frac{1}{1 + \cos[2 \alpha]} (-2 + 4 M0 - 2 \cos[2 \alpha] - 2 M0 \cos[2 t \omega] + M0 \cos[2 \alpha - 2 t \omega] + \right. \right. \\
& \quad M0 \cos[2 \alpha + 2 t \omega] - 2 \sqrt{2} \sqrt{M0^2 (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \right. \\
& \quad \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega]^2} \left. \right) \left. \right) \\
& \left(-4 M0 \omega \cos[t \omega] \sec[\alpha]^2 \sin[t \omega] - 4 M0 \omega \cos[2 \alpha] \cos[t \omega] \sec[\alpha]^2 \right. \\
& \quad \sin[t \omega] + 4 M0 \omega \sin[2 t \omega] + 2 M0 \omega \sin[2 \alpha - 2 t \omega] - \\
& \quad 4 M0 \omega \cos[\alpha - t \omega] \sec[\alpha]^2 \sin[\alpha - t \omega] - 4 M0 \omega \cos[2 \alpha] \\
& \quad \cos[\alpha - t \omega] \sec[\alpha]^2 \sin[\alpha - t \omega] - 2 M0 \omega \sin[2 \alpha + 2 t \omega] + \\
& \quad \left(\sqrt{2} (2 M0^2 \omega \cos[t \omega] (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \right. \\
& \quad \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega] + M0^2 \sin[\alpha]^2 \sin[t \omega]^2 \\
& \quad (4 \omega \sin[2 t \omega] + 2 \omega \sin[2 \alpha - 2 t \omega] - 2 \omega \sin[2 \alpha + 2 t \omega])) \left. \right) \left. \right) / \\
& \left(\sqrt{M0^2 (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \right. \\
& \quad \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega]^2} \left. \right) \left. \right) / \\
& \left(8 \sqrt{M0^2 (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega]) \right. \\
& \quad \sin[\alpha]^2 \sin[t \omega]^2} \left. \right) + \\
& \left(\sqrt{\left(\frac{1}{1 + \cos[2 \alpha]} (-2 + 4 M0 - 2 \cos[2 \alpha] - 2 M0 \cos[2 t \omega] + M0 \cos[2 \alpha - 2 t \omega] + \right. \right. \\
& \quad M0 \cos[2 \alpha + 2 t \omega] + 2 \sqrt{2} \sqrt{M0^2 (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \right. \\
& \quad \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega]^2} \left. \right) \left. \right) \\
& \left(4 M0 \omega \cos[t \omega] \sec[\alpha]^2 \sin[t \omega] + 4 M0 \omega \cos[2 \alpha] \cos[t \omega] \sec[\alpha]^2 \right. \\
& \quad \sin[t \omega] - 4 M0 \omega \sin[2 t \omega] - 2 M0 \omega \sin[2 \alpha - 2 t \omega] +
\end{aligned}$$

$$\begin{aligned}
& 4 M \theta \omega \cos [\alpha - t \omega] \sec [\alpha]^2 \sin [\alpha - t \omega] + 4 M \theta \omega \cos [2 \alpha] \\
& \cos [\alpha - t \omega] \sec [\alpha]^2 \sin [\alpha - t \omega] + 2 M \theta \omega \sin [2 \alpha + 2 t \omega] + \\
& \left(\sqrt{2} \left(2 M \theta^2 \omega \cos [t \omega] \left(6 + 2 \cos [2 \alpha] - 2 \cos [2 t \omega] + \cos [2 \alpha - 2 t \omega] + \right. \right. \right. \\
& \quad \left. \left. \cos [2 \alpha + 2 t \omega] \right) \sin [\alpha]^2 \sin [t \omega] + M \theta^2 \sin [\alpha]^2 \sin [t \omega]^2 \right. \\
& \quad \left. \left(4 \omega \sin [2 t \omega] + 2 \omega \sin [2 \alpha - 2 t \omega] - 2 \omega \sin [2 \alpha + 2 t \omega] \right) \right) \Big) / \\
& \left(\sqrt{M \theta^2 \left(6 + 2 \cos [2 \alpha] - 2 \cos [2 t \omega] + \cos [2 \alpha - 2 t \omega] + \right. \right. \\
& \quad \left. \left. \cos [2 \alpha + 2 t \omega] \right) \sin [\alpha]^2 \sin [t \omega]^2} \right) \Big) / \\
& \left(8 \sqrt{M \theta^2 \left(6 + 2 \cos [2 \alpha] - 2 \cos [2 t \omega] + \cos [2 \alpha - 2 t \omega] + \cos [2 \alpha + 2 t \omega] \right) \right. \\
& \quad \left. \sin [\alpha]^2 \sin [t \omega]^2} \right) \Big) + \\
& \left(\left(i \cos [\alpha] \cot [\alpha] \csc [t \omega]^2 \left(-4 M \theta + 2 M \theta \cos [2 t \omega] - M \theta \cos [2 \alpha - 2 t \omega] - \right. \right. \right. \\
& \quad M \theta \cos [2 \alpha + 2 t \omega] + 2 M \theta \cos [\alpha - t \omega]^2 \sec [\alpha]^2 + \\
& \quad 2 M \theta \cos [2 \alpha] \cos [\alpha - t \omega]^2 \sec [\alpha]^2 + 2 M \theta \sec [\alpha]^2 \sin [t \omega]^2 + \\
& \quad 2 M \theta \cos [2 \alpha] \sec [\alpha]^2 \sin [t \omega]^2 + 2 \sqrt{2} \sqrt{-M \theta^2 \left(-6 - 2 \cos [2 \alpha] + \right. \\
& \quad \left. 2 \cos [2 t \omega] - \cos [2 \alpha - 2 t \omega] - \cos [2 \alpha + 2 t \omega] \right) \sin [\alpha]^2 \sin [t \omega]^2} \Big) \\
& \quad \sqrt{\left(\frac{1}{1 + \cos [2 \alpha]} \left(-2 + 4 M \theta - 2 \cos [2 \alpha] - 2 M \theta \cos [2 t \omega] + M \theta \cos [2 \alpha - 2 t \omega] + \right. \right. \\
& \quad \left. \left. M \theta \cos [2 \alpha + 2 t \omega] - 2 \sqrt{2} \sqrt{M \theta^2 \left(6 + 2 \cos [2 \alpha] - 2 \cos [2 t \omega] + \right. \right. \right. \\
& \quad \left. \left. \cos [2 \alpha - 2 t \omega] + \cos [2 \alpha + 2 t \omega] \right) \sin [\alpha]^2 \sin [t \omega]^2} \right) \Big) \right) \\
& \left(4 M \theta - 2 M \theta \cos [2 t \omega] + M \theta \cos [2 \alpha - 2 t \omega] + M \theta \cos [2 \alpha + 2 t \omega] - \right. \\
& \quad 2 M \theta \cos [\alpha - t \omega]^2 \sec [\alpha]^2 - 2 M \theta \cos [2 \alpha] \cos [\alpha - t \omega]^2 \sec [\alpha]^2 - \\
& \quad 2 M \theta \sec [\alpha]^2 \sin [t \omega]^2 - 2 M \theta \cos [2 \alpha] \sec [\alpha]^2 \sin [t \omega]^2 + \\
& \quad 2 \sqrt{2} \sqrt{M \theta^2 \left(6 + 2 \cos [2 \alpha] - 2 \cos [2 t \omega] + \cos [2 \alpha - 2 t \omega] + \right. \\
& \quad \left. \cos [2 \alpha + 2 t \omega] \right) \sin [\alpha]^2 \sin [t \omega]^2} \Big) \Big) / \\
& \left(32 M \theta \left(1 + \cos [2 \alpha] \right) \sqrt{M \theta^2 \left(6 + 2 \cos [2 \alpha] - 2 \cos [2 t \omega] + \cos [2 \alpha - 2 t \omega] + \right. \right. \\
& \quad \left. \left. \cos [2 \alpha + 2 t \omega] \right) \sin [\alpha]^2 \sin [t \omega]^2} \right) \Big) - \\
& \left(i \cos [\alpha] \cot [\alpha] \csc [t \omega]^2 \left(4 M \theta - 2 M \theta \cos [2 t \omega] + M \theta \cos [2 \alpha - 2 t \omega] + \right. \right. \\
& \quad M \theta \cos [2 \alpha + 2 t \omega] - 2 M \theta \cos [\alpha - t \omega]^2 \sec [\alpha]^2 - \\
& \quad 2 M \theta \cos [2 \alpha] \cos [\alpha - t \omega]^2 \sec [\alpha]^2 - 2 M \theta \sec [\alpha]^2 \sin [t \omega]^2 - \\
& \quad 2 M \theta \cos [2 \alpha] \sec [\alpha]^2 \sin [t \omega]^2 + 2 \sqrt{2} \sqrt{-M \theta^2 \left(-6 - 2 \cos [2 \alpha] + \right. \\
& \quad \left. 2 \cos [2 t \omega] - \cos [2 \alpha - 2 t \omega] - \cos [2 \alpha + 2 t \omega] \right) \sin [\alpha]^2 \sin [t \omega]^2} \Big) \\
& \quad \sqrt{\left(\frac{1}{1 + \cos [2 \alpha]} \left(-2 + 4 M \theta - 2 \cos [2 \alpha] - 2 M \theta \cos [2 t \omega] + M \theta \cos [2 \alpha - 2 t \omega] + \right. \right. \\
& \quad \left. \left. M \theta \cos [2 \alpha + 2 t \omega] + 2 \sqrt{2} \sqrt{M \theta^2 \left(6 + 2 \cos [2 \alpha] - 2 \cos [2 t \omega] + \right. \right. \right. \\
& \quad \left. \left. \cos [2 \alpha - 2 t \omega] + \cos [2 \alpha + 2 t \omega] \right) \sin [\alpha]^2 \sin [t \omega]^2} \right) \Big) \right) \\
& \left(-4 M \theta + 2 M \theta \cos [2 t \omega] - M \theta \cos [2 \alpha - 2 t \omega] - M \theta \cos [2 \alpha + 2 t \omega] + \right. \\
& \quad 2 M \theta \cos [\alpha - t \omega]^2 \sec [\alpha]^2 + 2 M \theta \cos [2 \alpha] \cos [\alpha - t \omega]^2 \sec [\alpha]^2 + \\
& \quad 2 M \theta \sec [\alpha]^2 \sin [t \omega]^2 + 2 M \theta \cos [2 \alpha] \sec [\alpha]^2 \sin [t \omega]^2 +
\end{aligned}$$

$$\begin{aligned}
& \left. \left(2 \sqrt{2} \sqrt{\left(M0^2 \left(6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \right. \right. \right. \right. \\
& \quad \left. \left. \left. \cos[2 \alpha + 2 t \omega] \right) \sin[\alpha]^2 \sin[t \omega]^2 \right) \right) \right) \Bigg/ \\
& \left(32 M0 \left(1 + \cos[2 \alpha] \right) \sqrt{\left(M0^2 \left(6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \right. \right. \right. \right. \\
& \quad \left. \left. \left. \cos[2 \alpha + 2 t \omega] \right) \sin[\alpha]^2 \sin[t \omega]^2 \right) \right) \Bigg) \\
& \left(- \left(\left(i M0 \omega \left(1 + \cos[2 \alpha] \right) \cos[t \omega] \sec[\alpha] \sin[t \omega] \sqrt{\left(\frac{1}{1 + \cos[2 \alpha]} \right. \right. \right. \right. \right. \\
& \quad \left. \left. \left. \left(-2 + 4 M0 - 2 \cos[2 \alpha] - 2 M0 \cos[2 t \omega] + M0 \cos[2 \alpha - 2 t \omega] + \right. \right. \right. \right. \\
& \quad \left. \left. \left. M0 \cos[2 \alpha + 2 t \omega] - 2 \sqrt{2} \sqrt{\left(M0^2 \left(6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \right. \right. \right. \right. \right. \\
& \quad \left. \left. \left. \cos[2 \alpha + 2 t \omega] \right) \sin[\alpha]^2 \sin[t \omega]^2 \right) \right) \right) \right) \Bigg) \\
& \tan[\alpha] \Bigg) \Bigg/ \left(\sqrt{\left(M0^2 \left(6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \right. \right. \right. \right. \\
& \quad \left. \left. \left. \cos[2 \alpha + 2 t \omega] \right) \sin[\alpha]^2 \sin[t \omega]^2 \right) \right) \Bigg) + \\
& \left(i M0 \omega \left(1 + \cos[2 \alpha] \right) \cos[t \omega] \sec[\alpha] \sin[t \omega] \sqrt{\left(\frac{1}{1 + \cos[2 \alpha]} \right. \right. \right. \right. \\
& \quad \left. \left. \left. \left(-2 + 4 M0 - 2 \cos[2 \alpha] - 2 M0 \cos[2 t \omega] + M0 \cos[2 \alpha - 2 t \omega] + \right. \right. \right. \right. \\
& \quad \left. \left. \left. M0 \cos[2 \alpha + 2 t \omega] + 2 \sqrt{2} \sqrt{\left(M0^2 \left(6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \right. \right. \right. \right. \right. \\
& \quad \left. \left. \left. \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega] \right) \sin[\alpha]^2 \sin[t \omega]^2 \right) \right) \right) \Bigg) \tan[\alpha] \Bigg) \Bigg/ \\
& \left(\sqrt{\left(M0^2 \left(6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega] \right) \right. \right. \\
& \quad \left. \left. \sin[\alpha]^2 \sin[t \omega]^2 \right) \right) + \left(i M0 \left(1 + \cos[2 \alpha] \right) \sec[\alpha] \sin[t \omega]^2 \right. \\
& \quad \left. \sqrt{\left(\frac{1}{1 + \cos[2 \alpha]} \left(-2 + 4 M0 - 2 \cos[2 \alpha] - 2 M0 \cos[2 t \omega] + M0 \cos[2 \alpha - 2 t \omega] + \right. \right. \right. \right. \\
& \quad \left. \left. \left. M0 \cos[2 \alpha + 2 t \omega] - 2 \sqrt{2} \sqrt{\left(M0^2 \left(6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \right. \right. \right. \right. \right. \\
& \quad \left. \left. \left. \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega] \right) \sin[\alpha]^2 \sin[t \omega]^2 \right) \right) \right) \Bigg) \\
& \left(2 M0^2 \omega \cos[t \omega] \left(6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \right. \right. \\
& \quad \left. \left. \cos[2 \alpha + 2 t \omega] \right) \sin[\alpha]^2 \sin[t \omega] + M0^2 \sin[\alpha]^2 \sin[t \omega]^2 \right. \\
& \quad \left. \left(4 \omega \sin[2 t \omega] + 2 \omega \sin[2 \alpha - 2 t \omega] - 2 \omega \sin[2 \alpha + 2 t \omega] \right) \right) \tan[\alpha] \Bigg) \Bigg/ \\
& \left(4 \left(M0^2 \left(6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega] \right) \right. \right. \\
& \quad \left. \left. \sin[\alpha]^2 \sin[t \omega]^2 \right)^{3/2} \right) - \left(i M0 \left(1 + \cos[2 \alpha] \right) \sec[\alpha] \sin[t \omega]^2 \right. \\
& \quad \left. \sqrt{\left(\frac{1}{1 + \cos[2 \alpha]} \left(-2 + 4 M0 - 2 \cos[2 \alpha] - 2 M0 \cos[2 t \omega] + M0 \cos[2 \alpha - 2 t \omega] + \right. \right. \right. \right. \\
& \quad \left. \left. \left. M0 \cos[2 \alpha + 2 t \omega] + 2 \sqrt{2} \sqrt{\left(M0^2 \left(6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \right. \right. \right. \right. \right. \\
& \quad \left. \left. \left. \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega] \right) \sin[\alpha]^2 \sin[t \omega]^2 \right) \right) \right) \Bigg) \\
& \left(2 M0^2 \omega \cos[t \omega] \left(6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \right. \right.
\end{aligned}$$

$$\begin{aligned}
& \left(\cos[2\alpha + 2t\omega] \right) \sin[\alpha]^2 \sin[t\omega] + M0^2 \sin[\alpha]^2 \sin[t\omega]^2 \\
& \left(4\omega \sin[2t\omega] + 2\omega \sin[2\alpha - 2t\omega] - 2\omega \sin[2\alpha + 2t\omega] \right) \tan[\alpha] \Bigg) / \\
& \left(4 \left(M0^2 (6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega]) \right. \right. \\
& \quad \left. \sin[\alpha]^2 \sin[t\omega]^2 \right)^{3/2} - \\
& \left(i M0 \sec[\alpha] \sin[t\omega]^2 \left(4 M0 \omega \sin[2t\omega] + 2 M0 \omega \sin[2\alpha - 2t\omega] - \right. \right. \\
& \quad \left. \left. 2 M0 \omega \sin[2\alpha + 2t\omega] - \left(\sqrt{2} (2 M0^2 \omega \cos[t\omega] (6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \right. \right. \right. \\
& \quad \left. \left. \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega] + M0^2 \sin[\alpha]^2 \right. \right. \\
& \quad \left. \left. \sin[t\omega]^2 (4\omega \sin[2t\omega] + 2\omega \sin[2\alpha - 2t\omega] - 2\omega \sin[2\alpha + 2t\omega]) \right) \right) \Bigg) / \\
& \left(\sqrt{M0^2 (6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega])} \sin[\alpha]^2 \sin[t\omega]^2 \right) \tan[\alpha] \Bigg) / \\
& \left(4 \sqrt{M0^2 (6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega])} \right. \\
& \quad \left. \sin[\alpha]^2 \sin[t\omega]^2 \right) \sqrt{\left(\frac{1}{1 + \cos[2\alpha]} (-2 + 4 M0 - 2\cos[2\alpha] - 2 M0 \cos[2t\omega] + \right.} \\
& \quad \left. M0 \cos[2\alpha - 2t\omega] + M0 \cos[2\alpha + 2t\omega] - 2 \sqrt{2} \sqrt{M0^2 (6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \right.} \\
& \quad \left. \left. \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2 \right) \right) \Bigg) + \\
& \left(i M0 \sec[\alpha] \sin[t\omega]^2 \left(4 M0 \omega \sin[2t\omega] + 2 M0 \omega \sin[2\alpha - 2t\omega] - 2 M0 \omega \right. \right. \\
& \quad \left. \sin[2\alpha + 2t\omega] + \left(\sqrt{2} (2 M0^2 \omega \cos[t\omega] (6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \right. \right. \\
& \quad \left. \left. \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega] + M0^2 \sin[\alpha]^2 \right. \right. \\
& \quad \left. \left. \sin[t\omega]^2 (4\omega \sin[2t\omega] + 2\omega \sin[2\alpha - 2t\omega] - 2\omega \sin[2\alpha + 2t\omega]) \right) \right) \Bigg) / \\
& \left(\sqrt{M0^2 (6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega])} \sin[\alpha]^2 \sin[t\omega]^2 \right) \tan[\alpha] \Bigg) / \\
& \left(4 \sqrt{M0^2 (6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega])} \right. \\
& \quad \left. \sin[\alpha]^2 \sin[t\omega]^2 \right) \sqrt{\left(\frac{1}{1 + \cos[2\alpha]} \right.} \\
& \quad \left(-2 + 4 M0 - 2\cos[2\alpha] - 2 M0 \cos[2t\omega] + M0 \cos[2\alpha - 2t\omega] + \right. \\
& \quad \left. M0 \cos[2\alpha + 2t\omega] + 2 \sqrt{2} \sqrt{M0^2 (6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \right.} \\
& \quad \left. \left. \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2 \right) \right) \Bigg) \Bigg) \Bigg) \Bigg) \\
L22[\alpha_, \omega_, t_, M0_, s_, r_, \theta_] := \frac{1}{M0} 2 i \sec[\alpha] \sin[t\omega]^2 \tan[\alpha] \\
\left(s + \left(\left(-4 M0 + 2 M0 \cos[2t\omega] - M0 \cos[2\alpha - 2t\omega] - M0 \cos[2\alpha + 2t\omega] + 2 M0 \cos[\alpha - t\omega]^2 \right. \right. \right. \\
\quad \left. \sec[\alpha]^2 + 2 M0 \cos[2\alpha] \cos[\alpha - t\omega]^2 \sec[\alpha]^2 + 2 M0 \sec[\alpha]^2 \sin[t\omega]^2 + \right. \\
\quad \left. 2 M0 \cos[2\alpha] \sec[\alpha]^2 \sin[t\omega]^2 + 2 \sqrt{2} \sqrt{-M0^2 (-6 - 2\cos[2\alpha] + \right.} \\
\quad \left. \left. 2\cos[2t\omega] - \cos[2\alpha - 2t\omega] - \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2 \right) \right) \Bigg) \Bigg)
\end{aligned}$$

$$\begin{aligned}
& \sqrt{\left(\frac{1}{1 + \cos[2\alpha]} \left(-2 + 4M\theta - 2\cos[2\alpha] - 2M\theta\cos[2t\omega] + M\theta\cos[2\alpha - 2t\omega] + \right. \right. \\
& \quad \left. \left. M\theta\cos[2\alpha + 2t\omega] - 2\sqrt{2}\sqrt{M\theta^2(6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \right. \right. \\
& \quad \left. \left. \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega])\sin[\alpha]^2\sin[t\omega]^2} \right) \right) \Bigg/} \\
& \left(8\sqrt{M\theta^2(6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega])\sin[\alpha]^2\sin[t\omega]^2} \right) + \\
& \left(\left(4M\theta - 2M\theta\cos[2t\omega] + M\theta\cos[2\alpha - 2t\omega] + M\theta\cos[2\alpha + 2t\omega] - 2M\theta\cos[\alpha - t\omega]^2 \right. \right. \\
& \quad \left. \left. \sec[\alpha]^2 - 2M\theta\cos[2\alpha]\cos[\alpha - t\omega]^2\sec[\alpha]^2 - 2M\theta\sec[\alpha]^2\sin[t\omega]^2 - \right. \right. \\
& \quad \left. \left. 2M\theta\cos[2\alpha]\sec[\alpha]^2\sin[t\omega]^2 + 2\sqrt{2}\sqrt{-M\theta^2(-6 - 2\cos[2\alpha] + \right. \right. \\
& \quad \left. \left. 2\cos[2t\omega] - \cos[2\alpha - 2t\omega] - \cos[2\alpha + 2t\omega])\sin[\alpha]^2\sin[t\omega]^2} \right) \right) \Bigg/} \\
& \sqrt{\left(\frac{1}{1 + \cos[2\alpha]} \left(-2 + 4M\theta - 2\cos[2\alpha] - 2M\theta\cos[2t\omega] + M\theta\cos[2\alpha - 2t\omega] + \right. \right. \\
& \quad \left. \left. M\theta\cos[2\alpha + 2t\omega] + 2\sqrt{2}\sqrt{M\theta^2(6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \right. \right. \\
& \quad \left. \left. \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega])\sin[\alpha]^2\sin[t\omega]^2} \right) \right) \Bigg/} \\
& \left(8\sqrt{M\theta^2(6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega])\sin[\alpha]^2\sin[t\omega]^2} \right) \Bigg) \\
& \left(s \left(\left(\sqrt{\left(\frac{1}{1 + \cos[2\alpha]} \left(-2 + 4M\theta - 2\cos[2\alpha] - 2M\theta\cos[2t\omega] + M\theta\cos[2\alpha - 2t\omega] + \right. \right. \right. \right. \right. \\
& \quad \left. \left. \left. M\theta\cos[2\alpha + 2t\omega] - 2\sqrt{2}\sqrt{M\theta^2(6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \right. \right. \right. \right. \\
& \quad \left. \left. \left. \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega])\sin[\alpha]^2\sin[t\omega]^2} \right) \right) \right) \right. \\
& \quad \left(4M\theta - 2M\theta\cos[2t\omega] + M\theta\cos[2\alpha - 2t\omega] + M\theta\cos[2\alpha + 2t\omega] - \right. \\
& \quad \left. 2M\theta\cos[\alpha - t\omega]^2\sec[\alpha]^2 - 2M\theta\cos[2\alpha]\cos[\alpha - t\omega]^2\sec[\alpha]^2 - 2M\theta\sec[\alpha]^2\sin[t\omega]^2 - \right. \\
& \quad \left. 2M\theta\cos[2\alpha]\sec[\alpha]^2\sin[t\omega]^2 + 2\sqrt{2}\sqrt{M\theta^2(6 + 2\cos[2\alpha] - \right. \\
& \quad \left. 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega])\sin[\alpha]^2\sin[t\omega]^2} \right) \Bigg) \Bigg/} \\
& \left(8\sqrt{M\theta^2(6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega])\sin[\alpha]^2\sin[t\omega]^2} \right) + \\
& \left(\sqrt{\left(\frac{1}{1 + \cos[2\alpha]} \left(-2 + 4M\theta - 2\cos[2\alpha] - 2M\theta\cos[2t\omega] + M\theta\cos[2\alpha - 2t\omega] + \right. \right. \right. \\
& \quad \left. \left. \left. M\theta\cos[2\alpha + 2t\omega] + 2\sqrt{2}\sqrt{M\theta^2(6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \right. \right. \right. \\
& \quad \left. \left. \left. \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega])\sin[\alpha]^2\sin[t\omega]^2} \right) \right) \right) \Bigg/} \\
& \left(-4M\theta + 2M\theta\cos[2t\omega] - M\theta\cos[2\alpha - 2t\omega] - M\theta\cos[2\alpha + 2t\omega] + \right. \\
& \quad \left. 2M\theta\cos[\alpha - t\omega]^2\sec[\alpha]^2 + 2M\theta\cos[2\alpha]\cos[\alpha - t\omega]^2\sec[\alpha]^2 + 2M\theta\sec[\alpha]^2\sin[t\omega]^2 + \right. \\
& \quad \left. 2M\theta\cos[2\alpha]\sec[\alpha]^2\sin[t\omega]^2 + 2\sqrt{2}\sqrt{M\theta^2(6 + 2\cos[2\alpha] - \right. \\
& \quad \left. 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega])\sin[\alpha]^2\sin[t\omega]^2} \right) \Bigg) \Bigg/} \\
& \left(8\sqrt{M\theta^2(6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega])\sin[\alpha]^2\sin[t\omega]^2} \right)
\end{aligned}$$

$$\begin{aligned}
& \sin[\alpha]^2 \sin[t \omega]^2) \Big) + \\
& e^{i \theta} r \left(- \left(\left(i M \theta (1 + \cos[2 \alpha]) \sec[\alpha] \sin[t \omega]^2 \sqrt{\left(\frac{1}{1 + \cos[2 \alpha]} (-2 + 4 M \theta - \right. \right. \right. \right. \\
& \quad 2 \cos[2 \alpha] - 2 M \theta \cos[2 t \omega] + M \theta \cos[2 \alpha - 2 t \omega] + M \theta \cos[2 \alpha + 2 t \omega] - \\
& \quad 2 \sqrt{2} \sqrt{M \theta^2 (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \\
& \quad \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega]^2) \Big) \tan[\alpha] \Big) \Big) / \\
& \quad (2 \sqrt{M \theta^2 (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega])} \\
& \quad \sin[\alpha]^2 \sin[t \omega]^2) \Big) + \left(i M \theta (1 + \cos[2 \alpha]) \sec[\alpha] \sin[t \omega]^2 \right. \\
& \quad \sqrt{\left(\frac{1}{1 + \cos[2 \alpha]} (-2 + 4 M \theta - 2 \cos[2 \alpha] - 2 M \theta \cos[2 t \omega] + M \theta \cos[2 \alpha - 2 t \omega] + \right. \\
& \quad M \theta \cos[2 \alpha + 2 t \omega] + 2 \sqrt{2} \sqrt{M \theta^2 (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \\
& \quad \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega]^2) \Big) \tan[\alpha] \Big) \Big) / \\
& \quad (2 \sqrt{M \theta^2 (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega])} \\
& \quad \sin[\alpha]^2 \sin[t \omega]^2) \Big) \Big) + \\
& \left(- \left(\left(i M \theta (1 + \cos[2 \alpha]) \sec[\alpha] \sin[t \omega]^2 \sqrt{\left(\frac{1}{1 + \cos[2 \alpha]} (-2 + 4 M \theta - 2 \cos[2 \alpha] - \right. \right. \right. \right. \\
& \quad 2 M \theta \cos[2 t \omega] + M \theta \cos[2 \alpha - 2 t \omega] + M \theta \cos[2 \alpha + 2 t \omega] - \\
& \quad 2 \sqrt{2} \sqrt{M \theta^2 (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \\
& \quad \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega]^2) \Big) \tan[\alpha] \Big) \Big) / \\
& \quad (2 \sqrt{M \theta^2 (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega])} \\
& \quad \sin[\alpha]^2 \sin[t \omega]^2) \Big) + \left(i M \theta (1 + \cos[2 \alpha]) \sec[\alpha] \sin[t \omega]^2 \right. \\
& \quad \sqrt{\left(\frac{1}{1 + \cos[2 \alpha]} (-2 + 4 M \theta - 2 \cos[2 \alpha] - 2 M \theta \cos[2 t \omega] + M \theta \cos[2 \alpha - 2 t \omega] + \right. \\
& \quad M \theta \cos[2 \alpha + 2 t \omega] + 2 \sqrt{2} \sqrt{M \theta^2 (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \\
& \quad \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega]^2) \Big) \tan[\alpha] \Big) \Big) / \\
& \quad (2 \sqrt{M \theta^2 (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega])} \\
& \quad \sin[\alpha]^2 \sin[t \omega]^2) \Big) \Big) \\
& \left(e^{-i \theta} r \left(\left(\sqrt{\left(\frac{1}{1 + \cos[2 \alpha]} (-2 + 4 M \theta - 2 \cos[2 \alpha] - 2 M \theta \cos[2 t \omega] + M \theta \cos[2 \alpha - 2 t \omega] + \right. \right. \right. \right. \\
& \quad M \theta \cos[2 \alpha + 2 t \omega] - 2 \sqrt{2} \sqrt{M \theta^2 (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \\
& \quad \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega]^2) \Big) \right) \right. \\
& \quad (4 M \theta - 2 M \theta \cos[2 t \omega] + M \theta \cos[2 \alpha - 2 t \omega] + M \theta \cos[2 \alpha + 2 t \omega] - \\
& \quad 2 M \theta \cos[\alpha - t \omega]^2 \sec[\alpha]^2 - 2 M \theta \cos[2 \alpha] \cos[\alpha - t \omega]^2 \sec[\alpha]^2 - 2 M \theta \sec[\alpha]^2
\end{aligned}$$

$$\begin{aligned}
& \left(\frac{\sin[t \omega]^2 - 2 M0 \cos[2 \alpha] \sec[\alpha]^2 \sin[t \omega]^2 + 2 \sqrt{2} \sqrt{M0^2 (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega]^2}}{8 \sqrt{M0^2 (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega]^2}} \right) / \\
& \left(\sqrt{\left(\frac{1}{1 + \cos[2 \alpha]} (-2 + 4 M0 - 2 \cos[2 \alpha] - 2 M0 \cos[2 t \omega] + M0 \cos[2 \alpha - 2 t \omega] + M0 \cos[2 \alpha + 2 t \omega] + 2 \sqrt{2} \sqrt{M0^2 (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega]^2} \right)} \right) \\
& \left(-4 M0 + 2 M0 \cos[2 t \omega] - M0 \cos[2 \alpha - 2 t \omega] - M0 \cos[2 \alpha + 2 t \omega] + 2 M0 \cos[\alpha - t \omega]^2 \sec[\alpha]^2 + 2 M0 \cos[2 \alpha] \cos[\alpha - t \omega]^2 \sec[\alpha]^2 + 2 M0 \sec[\alpha]^2 \sin[t \omega]^2 + 2 M0 \cos[2 \alpha] \sec[\alpha]^2 \sin[t \omega]^2 + 2 \sqrt{2} \sqrt{M0^2 (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega]^2} \right) / \\
& \left(8 \sqrt{M0^2 (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega]^2} \right) + \\
& s \left(- \left(\left(i M0 (1 + \cos[2 \alpha]) \sec[\alpha] \sin[t \omega]^2 \sqrt{\left(\frac{1}{1 + \cos[2 \alpha]} (-2 + 4 M0 - 2 \cos[2 \alpha] - 2 M0 \cos[2 t \omega] + M0 \cos[2 \alpha - 2 t \omega] + M0 \cos[2 \alpha + 2 t \omega] - 2 \sqrt{2} \sqrt{M0^2 (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega]^2} \right)} \tan[\alpha] \right) / \right. \right. \\
& \left. \left(2 \sqrt{M0^2 (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega]^2} \right) + \left(i M0 (1 + \cos[2 \alpha]) \sec[\alpha] \sin[t \omega]^2 \right. \right. \\
& \left. \left. \sqrt{\left(\frac{1}{1 + \cos[2 \alpha]} (-2 + 4 M0 - 2 \cos[2 \alpha] - 2 M0 \cos[2 t \omega] + M0 \cos[2 \alpha - 2 t \omega] + M0 \cos[2 \alpha + 2 t \omega] + 2 \sqrt{2} \sqrt{M0^2 (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega]^2} \right)} \tan[\alpha] \right) \right) / \\
& \left(2 \sqrt{M0^2 (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega]^2} \right) + \\
& i \left(\left(- \left(\left(\sqrt{\left(\frac{1}{1 + \cos[2 \alpha]} (-2 + 4 M0 - 2 \cos[2 \alpha] - 2 M0 \cos[2 t \omega] + M0 \cos[2 \alpha - 2 t \omega] + M0 \cos[2 \alpha + 2 t \omega] - 2 \sqrt{2} \sqrt{M0^2 (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega]^2} \right)} \right) \right. \right. \right. \\
& \left. \left(4 M0 - 2 M0 \cos[2 t \omega] + M0 \cos[2 \alpha - 2 t \omega] + M0 \cos[2 \alpha + 2 t \omega] - 2 M0 \cos[\alpha - t \omega]^2 \sec[\alpha]^2 - 2 M0 \cos[2 \alpha] \cos[\alpha - t \omega]^2 \sec[\alpha]^2 - 2 M0 \sec[\alpha]^2 \sin[t \omega]^2 - 2 M0 \cos[2 \alpha] \sec[\alpha]^2 \sin[t \omega]^2 + 2 \sqrt{2} \sqrt{M0^2 (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega]^2} \right) \right) \right)
\end{aligned}$$

$$\begin{aligned}
& \left(2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega] \right) \sin[\alpha]^2 \sin[t \omega]^2 \Big) \\
& \left(2 M \theta^2 \omega \cos[t \omega] \left(6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \right. \right. \\
& \quad \left. \left. \cos[2 \alpha + 2 t \omega] \right) \sin[\alpha]^2 \sin[t \omega] + M \theta^2 \sin[\alpha]^2 \sin[t \omega]^2 \right. \\
& \quad \left. \left(4 \omega \sin[2 t \omega] + 2 \omega \sin[2 \alpha - 2 t \omega] - 2 \omega \sin[2 \alpha + 2 t \omega] \right) \right) \Big) / \\
& \left(16 \left(M \theta^2 \left(6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega] \right) \right. \right. \\
& \quad \left. \left. \sin[\alpha]^2 \sin[t \omega]^2 \right)^{3/2} \right) \Big) - \\
& \left(\sqrt{\left(\frac{1}{1 + \cos[2 \alpha]} \left(-2 + 4 M \theta - 2 \cos[2 \alpha] - 2 M \theta \cos[2 t \omega] + M \theta \cos[2 \alpha - 2 t \omega] + \right. \right. \right. \\
& \quad \left. \left. M \theta \cos[2 \alpha + 2 t \omega] + 2 \sqrt{2} \sqrt{\left(M \theta^2 \left(6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \right. \right. \right. \right. \\
& \quad \left. \left. \left. \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega] \right) \sin[\alpha]^2 \sin[t \omega]^2 \right) \right) \right) \right) \\
& \left(-4 M \theta + 2 M \theta \cos[2 t \omega] - M \theta \cos[2 \alpha - 2 t \omega] - M \theta \cos[2 \alpha + 2 t \omega] + \right. \\
& \quad 2 M \theta \cos[\alpha - t \omega]^2 \sec[\alpha]^2 + 2 M \theta \cos[2 \alpha] \cos[\alpha - t \omega]^2 \sec[\alpha]^2 + \\
& \quad 2 M \theta \sec[\alpha]^2 \sin[t \omega]^2 + 2 M \theta \cos[2 \alpha] \sec[\alpha]^2 \sin[t \omega]^2 + \\
& \quad 2 \sqrt{2} \sqrt{\left(M \theta^2 \left(6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega] \right) \right.} \\
& \quad \left. \sin[\alpha]^2 \sin[t \omega]^2 \right) \left(2 M \theta^2 \omega \cos[t \omega] \left(6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \right. \right. \\
& \quad \left. \left. \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega] \right) \sin[\alpha]^2 \sin[t \omega] + M \theta^2 \sin[\alpha]^2 \right. \\
& \quad \left. \sin[t \omega]^2 \left(4 \omega \sin[2 t \omega] + 2 \omega \sin[2 \alpha - 2 t \omega] - 2 \omega \sin[2 \alpha + 2 t \omega] \right) \right) \Big) \Big) / \\
& \left(16 \left(M \theta^2 \left(6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega] \right) \right. \right. \\
& \quad \left. \left. \sin[\alpha]^2 \sin[t \omega]^2 \right)^{3/2} \right) + \\
& \left(\left(4 M \theta - 2 M \theta \cos[2 t \omega] + M \theta \cos[2 \alpha - 2 t \omega] + M \theta \cos[2 \alpha + 2 t \omega] - \right. \right. \\
& \quad 2 M \theta \cos[\alpha - t \omega]^2 \sec[\alpha]^2 - 2 M \theta \cos[2 \alpha] \cos[\alpha - t \omega]^2 \sec[\alpha]^2 - 2 M \theta \sec[\alpha]^2 \\
& \quad \sin[t \omega]^2 - 2 M \theta \cos[2 \alpha] \sec[\alpha]^2 \sin[t \omega]^2 + 2 \sqrt{2} \sqrt{\left(M \theta^2 \left(6 + 2 \cos[2 \alpha] - \right. \right.} \\
& \quad \left. \left. 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega] \right) \sin[\alpha]^2 \sin[t \omega]^2 \right) \Big) \\
& \left(4 M \theta \omega \sin[2 t \omega] + 2 M \theta \omega \sin[2 \alpha - 2 t \omega] - 2 M \theta \omega \sin[2 \alpha + 2 t \omega] - \right. \\
& \quad \left(\sqrt{2} \left(2 M \theta^2 \omega \cos[t \omega] \left(6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \right. \right. \right. \\
& \quad \left. \left. \cos[2 \alpha + 2 t \omega] \right) \sin[\alpha]^2 \sin[t \omega] + M \theta^2 \sin[\alpha]^2 \sin[t \omega]^2 \right. \\
& \quad \left. \left(4 \omega \sin[2 t \omega] + 2 \omega \sin[2 \alpha - 2 t \omega] - 2 \omega \sin[2 \alpha + 2 t \omega] \right) \right) \Big) \Big) / \\
& \left(\sqrt{\left(M \theta^2 \left(6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \right. \right. \right. \\
& \quad \left. \left. \cos[2 \alpha + 2 t \omega] \right) \sin[\alpha]^2 \sin[t \omega]^2 \right) \Big) \Big) \Big) / \\
& \left(16 \left(1 + \cos[2 \alpha] \right) \sqrt{\left(M \theta^2 \left(6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \right. \right. \right. \\
& \quad \left. \left. \cos[2 \alpha + 2 t \omega] \right) \sin[\alpha]^2 \sin[t \omega]^2 \right) \Big) \\
& \sqrt{\left(\frac{1}{1 + \cos[2 \alpha]} \left(-2 + 4 M \theta - 2 \cos[2 \alpha] - 2 M \theta \cos[2 t \omega] + M \theta \cos[2 \alpha - 2 t \omega] + \right. \right. \right. \\
& \quad \left. \left. M \theta \cos[2 \alpha + 2 t \omega] - 2 \sqrt{2} \sqrt{\left(M \theta^2 \left(6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \right. \right. \right. \right. \\
& \quad \left. \left. \left. \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega] \right) \sin[\alpha]^2 \sin[t \omega]^2 \right) \right) \right) \Big) \Big) +
\end{aligned}$$

$$\begin{aligned}
& \left(\left(-4 M0 + 2 M0 \cos[2 t \omega] - M0 \cos[2 \alpha - 2 t \omega] - M0 \cos[2 \alpha + 2 t \omega] + \right. \right. \\
& \quad 2 M0 \cos[\alpha - t \omega]^2 \sec[\alpha]^2 + 2 M0 \cos[2 \alpha] \cos[\alpha - t \omega]^2 \sec[\alpha]^2 + 2 M0 \sec[\alpha]^2 \\
& \quad \sin[t \omega]^2 + 2 M0 \cos[2 \alpha] \sec[\alpha]^2 \sin[t \omega]^2 + 2 \sqrt{2} \sqrt{M0^2 (6 + 2 \cos[2 \alpha] - \\
& \quad 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega]^2} \left. \right) \\
& \left(4 M0 \omega \sin[2 t \omega] + 2 M0 \omega \sin[2 \alpha - 2 t \omega] - 2 M0 \omega \sin[2 \alpha + 2 t \omega] + \right. \\
& \quad \left(\sqrt{2} (2 M0^2 \omega \cos[t \omega] (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \right. \\
& \quad \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega] + M0^2 \sin[\alpha]^2 \sin[t \omega]^2 \\
& \quad (4 \omega \sin[2 t \omega] + 2 \omega \sin[2 \alpha - 2 t \omega] - 2 \omega \sin[2 \alpha + 2 t \omega])) \left. \right) \left. \right) / \\
& \left(\sqrt{M0^2 (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \right. \\
& \quad \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega]^2} \left. \right) \left. \right) / \\
& \left(16 (1 + \cos[2 \alpha]) \sqrt{M0^2 (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \right. \\
& \quad \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega]^2} \right. \\
& \quad \left. \sqrt{\left(\frac{1}{1 + \cos[2 \alpha]} (-2 + 4 M0 - 2 \cos[2 \alpha] - 2 M0 \cos[2 t \omega] + M0 \cos[2 \alpha - 2 t \omega] + \right. \right. \\
& \quad M0 \cos[2 \alpha + 2 t \omega] + 2 \sqrt{2} \sqrt{M0^2 (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \right. \\
& \quad \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega]^2} \left. \right) \left. \right) + } \\
& \left(\sqrt{\left(\frac{1}{1 + \cos[2 \alpha]} (-2 + 4 M0 - 2 \cos[2 \alpha] - 2 M0 \cos[2 t \omega] + M0 \cos[2 \alpha - 2 t \omega] + \right. \right. \\
& \quad M0 \cos[2 \alpha + 2 t \omega] - 2 \sqrt{2} \sqrt{M0^2 (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \right. \\
& \quad \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega]^2} \left. \right) \left. \right) } \\
& \left(-4 M0 \omega \cos[t \omega] \sec[\alpha]^2 \sin[t \omega] - 4 M0 \omega \cos[2 \alpha] \cos[t \omega] \sec[\alpha]^2 \right. \\
& \quad \sin[t \omega] + 4 M0 \omega \sin[2 t \omega] + 2 M0 \omega \sin[2 \alpha - 2 t \omega] - 4 M0 \omega \cos[\alpha - t \omega] \\
& \quad \sec[\alpha]^2 \sin[\alpha - t \omega] - 4 M0 \omega \cos[2 \alpha] \cos[\alpha - t \omega] \sec[\alpha]^2 \sin[\alpha - t \omega] - \\
& \quad 2 M0 \omega \sin[2 \alpha + 2 t \omega] + \left(\sqrt{2} (2 M0^2 \omega \cos[t \omega] (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \right. \\
& \quad \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega] + M0^2 \sin[\alpha]^2 \\
& \quad \sin[t \omega]^2 (4 \omega \sin[2 t \omega] + 2 \omega \sin[2 \alpha - 2 t \omega] - 2 \omega \sin[2 \alpha + 2 t \omega])) \left. \right) \left. \right) / \\
& \left(\sqrt{M0^2 (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \right. \\
& \quad \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega]^2} \left. \right) \left. \right) / \\
& \left(8 \sqrt{M0^2 (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega]) \right. \\
& \quad \sin[\alpha]^2 \sin[t \omega]^2} \left. \right) + \\
& \left(\sqrt{\left(\frac{1}{1 + \cos[2 \alpha]} (-2 + 4 M0 - 2 \cos[2 \alpha] - 2 M0 \cos[2 t \omega] + M0 \cos[2 \alpha - 2 t \omega] + \right. \right. \\
& \quad M0 \cos[2 \alpha + 2 t \omega] + 2 \sqrt{2} \sqrt{M0^2 (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \right. \\
& \quad \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega]^2} \left. \right) \left. \right) } \\
& \left(4 M0 \omega \cos[t \omega] \sec[\alpha]^2 \sin[t \omega] + 4 M0 \omega \cos[2 \alpha] \cos[t \omega] \sec[\alpha]^2 \right. \\
& \quad \sin[t \omega] - 4 M0 \omega \sin[2 t \omega] - 2 M0 \omega \sin[2 \alpha - 2 t \omega] + 4 M0 \omega \cos[\alpha - t \omega] \\
& \quad \sec[\alpha]^2 \sin[\alpha - t \omega] + 4 M0 \omega \cos[2 \alpha] \cos[\alpha - t \omega] \sec[\alpha]^2 \sin[\alpha - t \omega] +
\end{aligned}$$

$$\begin{aligned}
& 2 M \omega \sin [2 \alpha + 2 t \omega] + \left(\sqrt{2} \left(2 M \omega^2 \cos [t \omega] \left(6 + 2 \cos [2 \alpha] - 2 \cos [2 t \omega] + \right. \right. \right. \\
& \quad \left. \left. \cos [2 \alpha - 2 t \omega] + \cos [2 \alpha + 2 t \omega] \right) \sin [\alpha]^2 \sin [t \omega] + M \omega^2 \sin [\alpha]^2 \right. \\
& \quad \left. \sin [t \omega]^2 \left(4 \omega \sin [2 t \omega] + 2 \omega \sin [2 \alpha - 2 t \omega] - 2 \omega \sin [2 \alpha + 2 t \omega] \right) \right) \Big) / \\
& \left(\sqrt{M \omega^2 \left(6 + 2 \cos [2 \alpha] - 2 \cos [2 t \omega] + \cos [2 \alpha - 2 t \omega] + \right. \right. \\
& \quad \left. \left. \cos [2 \alpha + 2 t \omega] \right) \sin [\alpha]^2 \sin [t \omega]^2} \right) \Big) / \\
& \left(8 \sqrt{M \omega^2 \left(6 + 2 \cos [2 \alpha] - 2 \cos [2 t \omega] + \cos [2 \alpha - 2 t \omega] + \cos [2 \alpha + 2 t \omega] \right) \right. \\
& \quad \left. \sin [\alpha]^2 \sin [t \omega]^2} \right) \Big) \\
& \left(- \left(\left(i M \left(1 + \cos [2 \alpha] \right) \sec [\alpha] \sin [t \omega]^2 \sqrt{\left(\frac{1}{1 + \cos [2 \alpha]} \left(-2 + 4 M \omega - \right. \right. \right. \right. \right. \right. \\
& \quad \left. \left. \left. 2 \cos [2 \alpha] - 2 M \omega \cos [2 t \omega] + M \omega \cos [2 \alpha - 2 t \omega] + M \omega \cos [2 \alpha + 2 t \omega] - \right. \right. \right. \\
& \quad \left. \left. 2 \sqrt{2} \sqrt{M \omega^2 \left(6 + 2 \cos [2 \alpha] - 2 \cos [2 t \omega] + \cos [2 \alpha - 2 t \omega] + \right. \right. \right. \right. \\
& \quad \left. \left. \left. \cos [2 \alpha + 2 t \omega] \right) \sin [\alpha]^2 \sin [t \omega]^2} \right) \right) \tan [\alpha] \right) \Big) / \\
& \left(2 \sqrt{M \omega^2 \left(6 + 2 \cos [2 \alpha] - 2 \cos [2 t \omega] + \cos [2 \alpha - 2 t \omega] + \cos [2 \alpha + 2 t \omega] \right) \right. \\
& \quad \left. \sin [\alpha]^2 \sin [t \omega]^2} \right) \Big) + \left(i M \left(1 + \cos [2 \alpha] \right) \sec [\alpha] \sin [t \omega]^2 \right. \\
& \quad \left. \sqrt{\left(\frac{1}{1 + \cos [2 \alpha]} \left(-2 + 4 M \omega - 2 \cos [2 \alpha] - 2 M \omega \cos [2 t \omega] + M \omega \cos [2 \alpha - 2 t \omega] + \right. \right. \right. \right. \\
& \quad \left. \left. \left. M \omega \cos [2 \alpha + 2 t \omega] + 2 \sqrt{2} \sqrt{M \omega^2 \left(6 + 2 \cos [2 \alpha] - 2 \cos [2 t \omega] + \right. \right. \right. \right. \\
& \quad \left. \left. \left. \cos [2 \alpha - 2 t \omega] + \cos [2 \alpha + 2 t \omega] \right) \sin [\alpha]^2 \sin [t \omega]^2} \right) \right) \tan [\alpha] \right) \Big) / \\
& \left(2 \sqrt{M \omega^2 \left(6 + 2 \cos [2 \alpha] - 2 \cos [2 t \omega] + \cos [2 \alpha - 2 t \omega] + \cos [2 \alpha + 2 t \omega] \right) \right. \\
& \quad \left. \sin [\alpha]^2 \sin [t \omega]^2} \right) \Big) + \\
& \left(\left(\left(-4 M \omega + 2 M \omega \cos [2 t \omega] - M \omega \cos [2 \alpha - 2 t \omega] - M \omega \cos [2 \alpha + 2 t \omega] + 2 M \omega \cos [\alpha - t \omega]^2 \right. \right. \right. \\
& \quad \left. \left. \sec [\alpha]^2 + 2 M \omega \cos [2 \alpha] \cos [\alpha - t \omega]^2 \sec [\alpha]^2 + 2 M \omega \sec [\alpha]^2 \sin [t \omega]^2 + \right. \right. \\
& \quad \left. \left. 2 M \omega \cos [2 \alpha] \sec [\alpha]^2 \sin [t \omega]^2 + 2 \sqrt{2} \sqrt{-M \omega^2 \left(-6 - 2 \cos [2 \alpha] + \right. \right. \right. \right. \\
& \quad \left. \left. \left. 2 \cos [2 t \omega] - \cos [2 \alpha - 2 t \omega] - \cos [2 \alpha + 2 t \omega] \right) \sin [\alpha]^2 \sin [t \omega]^2} \right) \right) \right) \\
& \quad \left. \sqrt{\left(\frac{1}{1 + \cos [2 \alpha]} \left(-2 + 4 M \omega - 2 \cos [2 \alpha] - 2 M \omega \cos [2 t \omega] + M \omega \cos [2 \alpha - 2 t \omega] + \right. \right. \right. \right. \\
& \quad \left. \left. \left. M \omega \cos [2 \alpha + 2 t \omega] - 2 \sqrt{2} \sqrt{M \omega^2 \left(6 + 2 \cos [2 \alpha] - 2 \cos [2 t \omega] + \right. \right. \right. \right. \\
& \quad \left. \left. \left. \cos [2 \alpha - 2 t \omega] + \cos [2 \alpha + 2 t \omega] \right) \sin [\alpha]^2 \sin [t \omega]^2} \right) \right) \right) \Big) / \\
& \left(8 \sqrt{M \omega^2 \left(6 + 2 \cos [2 \alpha] - 2 \cos [2 t \omega] + \cos [2 \alpha - 2 t \omega] + \cos [2 \alpha + 2 t \omega] \right) \right. \\
& \quad \left. \sin [\alpha]^2 \sin [t \omega]^2} \right) \Big) + \\
& \left(\left(4 M \omega - 2 M \omega \cos [2 t \omega] + M \omega \cos [2 \alpha - 2 t \omega] + M \omega \cos [2 \alpha + 2 t \omega] - \right. \right. \\
& \quad \left. \left. 2 M \omega \cos [\alpha - t \omega]^2 \sec [\alpha]^2 - 2 M \omega \cos [2 \alpha] \cos [\alpha - t \omega]^2 \sec [\alpha]^2 - 2 M \omega \sec [\alpha]^2 \right. \right. \\
& \quad \left. \left. \sin [t \omega]^2 - 2 M \omega \cos [2 \alpha] \sec [\alpha]^2 \sin [t \omega]^2 + 2 \sqrt{2} \sqrt{-M \omega^2 \left(-6 - 2 \cos [2 \alpha] + \right. \right. \right. \right.
\end{aligned}$$

$$\begin{aligned}
& 2 \cos[2 t \omega] - \cos[2 \alpha - 2 t \omega] - \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega]^2) \\
& \sqrt{\left(\frac{1}{1 + \cos[2 \alpha]} \left(-2 + 4 M0 - 2 \cos[2 \alpha] - 2 M0 \cos[2 t \omega] + M0 \cos[2 \alpha - 2 t \omega] + \right.\right. \\
& \quad \left.M0 \cos[2 \alpha + 2 t \omega] + 2 \sqrt{2} \sqrt{M0^2 (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \right.} \\
& \quad \left.\cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega]^2)\right)} \Bigg) \Bigg/ \\
& \left(8 \sqrt{M0^2 (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega])} \right. \\
& \quad \left.\sin[\alpha]^2 \sin[t \omega]^2)\right) \\
& \left(-\left(\left(i M0 \omega (1 + \cos[2 \alpha]) \cos[t \omega] \sec[\alpha] \sin[t \omega] \sqrt{\left(\frac{1}{1 + \cos[2 \alpha]} \right.\right. \right.\right. \\
& \quad \left.\left.\left(-2 + 4 M0 - 2 \cos[2 \alpha] - 2 M0 \cos[2 t \omega] + M0 \cos[2 \alpha - 2 t \omega] + \right.\right.\right. \\
& \quad \left.\left.M0 \cos[2 \alpha + 2 t \omega] - 2 \sqrt{2} \sqrt{M0^2 (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \right.\right.} \\
& \quad \left.\left.\cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega]^2)\right)} \right) \\
& \quad \tan[\alpha] \Bigg) \Bigg/ \left(\sqrt{M0^2 (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \right.} \\
& \quad \left.\cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega]^2)\right) + \\
& \left(i M0 \omega (1 + \cos[2 \alpha]) \cos[t \omega] \sec[\alpha] \sin[t \omega] \sqrt{\left(\frac{1}{1 + \cos[2 \alpha]} \right.\right. \right. \\
& \quad \left.\left.\left(-2 + 4 M0 - 2 \cos[2 \alpha] - 2 M0 \cos[2 t \omega] + M0 \cos[2 \alpha - 2 t \omega] + \right.\right.\right. \\
& \quad \left.\left.M0 \cos[2 \alpha + 2 t \omega] + 2 \sqrt{2} \sqrt{M0^2 (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \right.\right.} \\
& \quad \left.\left.\cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega]^2)\right)} \right) \tan[\alpha] \Bigg) \Bigg/ \\
& \left(\sqrt{M0^2 (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega])} \right. \\
& \quad \left.\sin[\alpha]^2 \sin[t \omega]^2)\right) + \left(i M0 (1 + \cos[2 \alpha]) \sec[\alpha] \sin[t \omega]^2 \right. \\
& \quad \sqrt{\left(\frac{1}{1 + \cos[2 \alpha]} \left(-2 + 4 M0 - 2 \cos[2 \alpha] - 2 M0 \cos[2 t \omega] + M0 \cos[2 \alpha - 2 t \omega] + \right.\right. \\
& \quad \left.M0 \cos[2 \alpha + 2 t \omega] - 2 \sqrt{2} \sqrt{M0^2 (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \right.} \\
& \quad \left.\cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega]^2)\right)} \Bigg) \\
& \left(2 M0^2 \omega \cos[t \omega] (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \right. \\
& \quad \left.\cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega] + M0^2 \sin[\alpha]^2 \sin[t \omega]^2 \right. \\
& \quad \left.(4 \omega \sin[2 t \omega] + 2 \omega \sin[2 \alpha - 2 t \omega] - 2 \omega \sin[2 \alpha + 2 t \omega]) \tan[\alpha] \right) \Bigg/ \\
& \left(4 (M0^2 (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega]) \right. \\
& \quad \left.\sin[\alpha]^2 \sin[t \omega]^2)^{3/2}\right) - \left(i M0 (1 + \cos[2 \alpha]) \sec[\alpha] \sin[t \omega]^2 \right. \\
& \quad \sqrt{\left(\frac{1}{1 + \cos[2 \alpha]} \left(-2 + 4 M0 - 2 \cos[2 \alpha] - 2 M0 \cos[2 t \omega] + M0 \cos[2 \alpha - 2 t \omega] + \right.\right.}
\end{aligned}$$

$$\begin{aligned}
& M0 \cos[2\alpha + 2t\omega] + 2\sqrt{2} \sqrt{M0^2 (6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \\
& \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2} \Big) \Big) \\
& \left(2M0^2 \omega \cos[t\omega] (6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \right. \\
& \left. \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega] + M0^2 \sin[\alpha]^2 \sin[t\omega]^2 \right. \\
& \left. (4\omega \sin[2t\omega] + 2\omega \sin[2\alpha - 2t\omega] - 2\omega \sin[2\alpha + 2t\omega]) \right) \tan[\alpha] \Big) \Big) / \\
& \left(4 (M0^2 (6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega]) \right. \\
& \left. \sin[\alpha]^2 \sin[t\omega]^2)^{3/2} \right) - \\
& \left(i M0 \sec[\alpha] \sin[t\omega]^2 (4M0\omega \sin[2t\omega] + 2M0\omega \sin[2\alpha - 2t\omega] - \right. \\
& 2M0\omega \sin[2\alpha + 2t\omega] - \left(\sqrt{2} (2M0^2 \omega \cos[t\omega] (6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \right. \\
& \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega] + M0^2 \sin[\alpha]^2 \\
& \sin[t\omega]^2 (4\omega \sin[2t\omega] + 2\omega \sin[2\alpha - 2t\omega] - 2\omega \sin[2\alpha + 2t\omega]) \Big) \Big) \Big) / \\
& \left(\sqrt{M0^2 (6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2} \right) \tan[\alpha] \Big) \Big) / \\
& \left(4 \sqrt{M0^2 (6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega]) \right. \\
& \sin[\alpha]^2 \sin[t\omega]^2} \sqrt{\left(\frac{1}{1 + \cos[2\alpha]} (-2 + 4M0 - 2\cos[2\alpha] - 2M0 \cos[2t\omega] + \right. \\
& M0 \cos[2\alpha - 2t\omega] + M0 \cos[2\alpha + 2t\omega] - 2\sqrt{2} \sqrt{M0^2 (6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2} \Big) \Big) \Big) \Big) + \\
& \left(i M0 \sec[\alpha] \sin[t\omega]^2 (4M0\omega \sin[2t\omega] + 2M0\omega \sin[2\alpha - 2t\omega] - 2M0\omega \right. \\
& \sin[2\alpha + 2t\omega] + \left(\sqrt{2} (2M0^2 \omega \cos[t\omega] (6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \right. \\
& \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega] + M0^2 \sin[\alpha]^2 \\
& \sin[t\omega]^2 (4\omega \sin[2t\omega] + 2\omega \sin[2\alpha - 2t\omega] - 2\omega \sin[2\alpha + 2t\omega]) \Big) \Big) \Big) / \\
& \left(\sqrt{M0^2 (6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2} \right) \tan[\alpha] \Big) \Big) / \\
& \left(4 \sqrt{M0^2 (6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega]) \right. \\
& \sin[\alpha]^2 \sin[t\omega]^2} \sqrt{\left(\frac{1}{1 + \cos[2\alpha]} \right. \\
& \left(-2 + 4M0 - 2\cos[2\alpha] - 2M0 \cos[2t\omega] + M0 \cos[2\alpha - 2t\omega] + \right. \\
& M0 \cos[2\alpha + 2t\omega] + 2\sqrt{2} \sqrt{M0^2 (6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2} \Big) \Big) \Big) \Big) \Big) + \\
& \frac{1}{M0} \sec[\alpha]^2 (\cos[\alpha + t\omega]^2 + \sin[t\omega]^2) \left(e^{-i\theta} r + \left(i \cos[\alpha] \cot[\alpha] \csc[t\omega]^2 \right. \right. \\
& \left. \left(-4M0 + 2M0 \cos[2t\omega] - M0 \cos[2\alpha - 2t\omega] - M0 \cos[2\alpha + 2t\omega] + \right. \right. \\
& \left. \left. 2M0 \cos[\alpha - t\omega]^2 \sec[\alpha]^2 + 2M0 \cos[2\alpha] \cos[\alpha - t\omega]^2 \sec[\alpha]^2 + \right. \right.
\end{aligned}$$

$$\begin{aligned}
& 2 M0 \operatorname{Sec}[\alpha]^2 \sin[t \omega]^2 + 2 M0 \cos[2 \alpha] \operatorname{Sec}[\alpha]^2 \sin[t \omega]^2 + \\
& 2 \sqrt{2} \sqrt{\left(-M0^2 \left(-6 - 2 \cos[2 \alpha] + 2 \cos[2 t \omega] - \right.\right.} \\
& \quad \left.\left.\cos[2 \alpha - 2 t \omega] - \cos[2 \alpha + 2 t \omega]\right) \sin[\alpha]^2 \sin[t \omega]^2\right)} \\
& \sqrt{\left(\frac{1}{1 + \cos[2 \alpha]} \left(-2 + 4 M0 - 2 \cos[2 \alpha] - 2 M0 \cos[2 t \omega] + M0 \cos[2 \alpha - 2 t \omega] + \right.\right.} \\
& \quad \left.\left.M0 \cos[2 \alpha + 2 t \omega] - 2 \sqrt{2} \sqrt{\left(M0^2 \left(6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \right.\right.\right.} \\
& \quad \left.\left.\cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega]\right) \sin[\alpha]^2 \sin[t \omega]^2\right)}\right)} \\
& \left(4 M0 - 2 M0 \cos[2 t \omega] + M0 \cos[2 \alpha - 2 t \omega] + M0 \cos[2 \alpha + 2 t \omega] - \right. \\
& \quad 2 M0 \cos[\alpha - t \omega]^2 \operatorname{Sec}[\alpha]^2 - 2 M0 \cos[2 \alpha] \cos[\alpha - t \omega]^2 \operatorname{Sec}[\alpha]^2 - \\
& \quad 2 M0 \operatorname{Sec}[\alpha]^2 \sin[t \omega]^2 - 2 M0 \cos[2 \alpha] \operatorname{Sec}[\alpha]^2 \sin[t \omega]^2 + \\
& \quad 2 \sqrt{2} \sqrt{\left(M0^2 \left(6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \right.\right.} \\
& \quad \left.\left.\cos[2 \alpha + 2 t \omega]\right) \sin[\alpha]^2 \sin[t \omega]^2\right)}\right) / \\
& \left(32 M0 \left(1 + \cos[2 \alpha]\right) \sqrt{\left(M0^2 \left(6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \right.\right.\right.} \\
& \quad \left.\left.\cos[2 \alpha + 2 t \omega]\right) \sin[\alpha]^2 \sin[t \omega]^2\right)} - \\
& \left(i \cos[\alpha] \cot[\alpha] \csc[t \omega]^2 \left(4 M0 - 2 M0 \cos[2 t \omega] + M0 \cos[2 \alpha - 2 t \omega] + \right.\right. \\
& \quad M0 \cos[2 \alpha + 2 t \omega] - 2 M0 \cos[\alpha - t \omega]^2 \operatorname{Sec}[\alpha]^2 - \\
& \quad 2 M0 \cos[2 \alpha] \cos[\alpha - t \omega]^2 \operatorname{Sec}[\alpha]^2 - 2 M0 \operatorname{Sec}[\alpha]^2 \sin[t \omega]^2 - \\
& \quad 2 M0 \cos[2 \alpha] \operatorname{Sec}[\alpha]^2 \sin[t \omega]^2 + 2 \sqrt{2} \sqrt{\left(-M0^2 \left(-6 - 2 \cos[2 \alpha] + \right.\right.} \\
& \quad \left.\left.2 \cos[2 t \omega] - \cos[2 \alpha - 2 t \omega] - \cos[2 \alpha + 2 t \omega]\right) \sin[\alpha]^2 \sin[t \omega]^2\right)}\right) \\
& \sqrt{\left(\frac{1}{1 + \cos[2 \alpha]} \left(-2 + 4 M0 - 2 \cos[2 \alpha] - 2 M0 \cos[2 t \omega] + M0 \cos[2 \alpha - 2 t \omega] + \right.\right.} \\
& \quad \left.\left.M0 \cos[2 \alpha + 2 t \omega] + 2 \sqrt{2} \sqrt{\left(M0^2 \left(6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \right.\right.\right.} \\
& \quad \left.\left.\cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega]\right) \sin[\alpha]^2 \sin[t \omega]^2\right)}\right)} \\
& \left(-4 M0 + 2 M0 \cos[2 t \omega] - M0 \cos[2 \alpha - 2 t \omega] - M0 \cos[2 \alpha + 2 t \omega] + \right. \\
& \quad 2 M0 \cos[\alpha - t \omega]^2 \operatorname{Sec}[\alpha]^2 + 2 M0 \cos[2 \alpha] \cos[\alpha - t \omega]^2 \operatorname{Sec}[\alpha]^2 + \\
& \quad 2 M0 \operatorname{Sec}[\alpha]^2 \sin[t \omega]^2 + 2 M0 \cos[2 \alpha] \operatorname{Sec}[\alpha]^2 \sin[t \omega]^2 + \\
& \quad 2 \sqrt{2} \sqrt{\left(M0^2 \left(6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \right.\right.} \\
& \quad \left.\left.\cos[2 \alpha + 2 t \omega]\right) \sin[\alpha]^2 \sin[t \omega]^2\right)}\right) / \\
& \left(32 M0 \left(1 + \cos[2 \alpha]\right) \sqrt{\left(M0^2 \left(6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \right.\right.\right.} \\
& \quad \left.\left.\cos[2 \alpha + 2 t \omega]\right) \sin[\alpha]^2 \sin[t \omega]^2\right)}\right) \\
& \left(s \left(\left(\sqrt{\left(\frac{1}{1 + \cos[2 \alpha]} \left(-2 + 4 M0 - 2 \cos[2 \alpha] - 2 M0 \cos[2 t \omega] + M0 \cos[2 \alpha - 2 t \omega] + \right.\right.\right.} \right.\right. \\
& \quad \left.\left.\left.M0 \cos[2 \alpha + 2 t \omega] - 2 \sqrt{2} \sqrt{\left(M0^2 \left(6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \right.\right.\right.} \right.\right. \\
& \quad \left.\left.\left.\cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega]\right) \sin[\alpha]^2 \sin[t \omega]^2\right)}\right)}\right) \\
& \left(4 M0 - 2 M0 \cos[2 t \omega] + M0 \cos[2 \alpha - 2 t \omega] + M0 \cos[2 \alpha + 2 t \omega] - \right. \\
& \quad 2 M0 \cos[\alpha - t \omega]^2 \operatorname{Sec}[\alpha]^2 - 2 M0 \cos[2 \alpha] \cos[\alpha - t \omega]^2 \operatorname{Sec}[\alpha]^2 - \\
& \quad 2 M0 \operatorname{Sec}[\alpha]^2 \sin[t \omega]^2 - 2 M0 \cos[2 \alpha] \operatorname{Sec}[\alpha]^2 \sin[t \omega]^2 +
\end{aligned}$$

$$\begin{aligned}
& 2\sqrt{2} \sqrt{\left(M\theta^2 \left(6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \right.\right. \\
& \quad \left.\left.\cos[2\alpha + 2t\omega]\right) \sin[\alpha]^2 \sin[t\omega]^2\right)} \Bigg) \Bigg/ \\
& \left(8\sqrt{\left(M\theta^2 \left(6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega]\right) \right.\right. \\
& \quad \left.\left.\sin[\alpha]^2 \sin[t\omega]^2\right)}\right) + \\
& \left(\sqrt{\left(\frac{1}{1 + \cos[2\alpha]} \left(-2 + 4M\theta - 2\cos[2\alpha] - 2M\theta\cos[2t\omega] + M\theta\cos[2\alpha - 2t\omega] + \right.\right. \right. \\
& \quad \left.\left.\left.M\theta\cos[2\alpha + 2t\omega] + 2\sqrt{2} \sqrt{\left(M\theta^2 \left(6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \right.\right.\right. \right. \\
& \quad \left.\left.\left.\cos[2\alpha + 2t\omega]\right) \sin[\alpha]^2 \sin[t\omega]^2\right)}\right)}\right) \Bigg) \\
& \left(-4M\theta + 2M\theta\cos[2t\omega] - M\theta\cos[2\alpha - 2t\omega] - M\theta\cos[2\alpha + 2t\omega] + \right. \\
& \quad 2M\theta\cos[\alpha - t\omega]^2 \sec[\alpha]^2 + 2M\theta\cos[2\alpha]\cos[\alpha - t\omega]^2 \sec[\alpha]^2 + \\
& \quad 2M\theta\sec[\alpha]^2 \sin[t\omega]^2 + 2M\theta\cos[2\alpha]\sec[\alpha]^2 \sin[t\omega]^2 + \\
& \quad \left.2\sqrt{2} \sqrt{\left(M\theta^2 \left(6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \right.\right. \right. \\
& \quad \left.\left.\left.\cos[2\alpha + 2t\omega]\right) \sin[\alpha]^2 \sin[t\omega]^2\right)}\right)} \Bigg) \Bigg/ \\
& \left(8\sqrt{\left(M\theta^2 \left(6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega]\right) \right.\right. \\
& \quad \left.\left.\sin[\alpha]^2 \sin[t\omega]^2\right)}\right) \Bigg) + \\
& e^{i\theta} r \left(- \left(\left(i M\theta (1 + \cos[2\alpha]) \sec[\alpha] \sin[t\omega]^2 \sqrt{\left(\frac{1}{1 + \cos[2\alpha]} \left(-2 + 4M\theta - \right.\right. \right. \right. \right. \\
& \quad \left.\left.\left.\left.2\cos[2\alpha] - 2M\theta\cos[2t\omega] + M\theta\cos[2\alpha - 2t\omega] + M\theta\cos[2\alpha + 2t\omega] - \right.\right.\right.\right. \\
& \quad \left.\left.\left.\left.2\sqrt{2} \sqrt{\left(M\theta^2 \left(6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \right.\right.\right.\right.\right. \\
& \quad \left.\left.\left.\left.\cos[2\alpha + 2t\omega]\right) \sin[\alpha]^2 \sin[t\omega]^2\right)}\right)}\right)} \tan[\alpha] \right) \Bigg) \Bigg/ \\
& \left(2\sqrt{\left(M\theta^2 \left(6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega]\right) \right.\right. \\
& \quad \left.\left.\sin[\alpha]^2 \sin[t\omega]^2\right)}\right) \Bigg) + \left(i M\theta (1 + \cos[2\alpha]) \sec[\alpha] \sin[t\omega]^2 \right. \\
& \quad \left. \sqrt{\left(\frac{1}{1 + \cos[2\alpha]} \left(-2 + 4M\theta - 2\cos[2\alpha] - 2M\theta\cos[2t\omega] + M\theta\cos[2\alpha - 2t\omega] + \right.\right. \right. \right. \\
& \quad \left.\left.\left.\left. M\theta\cos[2\alpha + 2t\omega] + 2\sqrt{2} \sqrt{\left(M\theta^2 \left(6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \right.\right.\right.\right.\right. \right. \\
& \quad \left.\left.\left.\left.\cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega]\right) \sin[\alpha]^2 \sin[t\omega]^2\right)}\right)}\right)} \tan[\alpha] \right) \Bigg) \Bigg/ \\
& \left(2\sqrt{\left(M\theta^2 \left(6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega]\right) \right.\right. \\
& \quad \left.\left.\sin[\alpha]^2 \sin[t\omega]^2\right)}\right) \Bigg) \Bigg) + \\
& \left(\left(\sqrt{\left(\frac{1}{1 + \cos[2\alpha]} \left(-2 + 4M\theta - 2\cos[2\alpha] - 2M\theta\cos[2t\omega] + M\theta\cos[2\alpha - 2t\omega] + \right.\right. \right. \right. \right. \\
& \quad \left.\left.\left.\left. M\theta\cos[2\alpha + 2t\omega] - 2\sqrt{2} \sqrt{\left(M\theta^2 \left(6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \right.\right.\right.\right.\right. \right. \\
& \quad \left.\left.\left.\left.\cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega]\right) \sin[\alpha]^2 \sin[t\omega]^2\right)}\right)}\right)} \right) \Bigg) \\
& \left(4M\theta - 2M\theta\cos[2t\omega] + M\theta\cos[2\alpha - 2t\omega] + M\theta\cos[2\alpha + 2t\omega] - \right. \\
& \quad \left.2M\theta\cos[\alpha - t\omega]^2 \sec[\alpha]^2 - 2M\theta\cos[2\alpha]\cos[\alpha - t\omega]^2 \sec[\alpha]^2 - \right.
\end{aligned}$$

$$\begin{aligned}
& 2 M0 \operatorname{Sec}[\alpha]^2 \sin[t \omega]^2 - 2 M0 \cos[2 \alpha] \operatorname{Sec}[\alpha]^2 \sin[t \omega]^2 + \\
& 2 \sqrt{2} \sqrt{\left(M0^2 (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \right. \\
& \quad \left. \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega]^2\right)} \Big) \Big) / \\
& \left(8 \sqrt{\left(M0^2 (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega]) \right. \right. \\
& \quad \left. \left. \sin[\alpha]^2 \sin[t \omega]^2\right)}\right) + \\
& \left(\sqrt{\left(\frac{1}{1 + \cos[2 \alpha]} \left(-2 + 4 M0 - 2 \cos[2 \alpha] - 2 M0 \cos[2 t \omega] + M0 \cos[2 \alpha - 2 t \omega] + \right. \right. \right. \\
& \quad \left. \left. M0 \cos[2 \alpha + 2 t \omega] + 2 \sqrt{2} \sqrt{\left(M0^2 (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \right. \right. \right. \\
& \quad \left. \left. \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega]^2\right)}\right)}\right) \Big) \Big) \\
& \left(-4 M0 + 2 M0 \cos[2 t \omega] - M0 \cos[2 \alpha - 2 t \omega] - M0 \cos[2 \alpha + 2 t \omega] + \right. \\
& 2 M0 \cos[\alpha - t \omega]^2 \operatorname{Sec}[\alpha]^2 + 2 M0 \cos[2 \alpha] \cos[\alpha - t \omega]^2 \operatorname{Sec}[\alpha]^2 + \\
& 2 M0 \operatorname{Sec}[\alpha]^2 \sin[t \omega]^2 + 2 M0 \cos[2 \alpha] \operatorname{Sec}[\alpha]^2 \sin[t \omega]^2 + \\
& 2 \sqrt{2} \sqrt{\left(M0^2 (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \right. \\
& \quad \left. \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega]^2\right)} \Big) \Big) / \\
& \left(8 \sqrt{\left(M0^2 (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega]) \right. \right. \\
& \quad \left. \left. \sin[\alpha]^2 \sin[t \omega]^2\right)}\right) \Big) \Big) \\
& \left(e^{-i \theta} r \left(\left(\sqrt{\left(\frac{1}{1 + \cos[2 \alpha]} \left(-2 + 4 M0 - 2 \cos[2 \alpha] - 2 M0 \cos[2 t \omega] + M0 \cos[2 \alpha - 2 t \omega] + \right. \right. \right. \right. \right. \right. \\
& \quad \left. \left. M0 \cos[2 \alpha + 2 t \omega] - 2 \sqrt{2} \sqrt{\left(M0^2 (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \right. \right. \right. \right. \right. \\
& \quad \left. \left. \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega]^2\right)}\right)}\right) \Big) \Big) \\
& \left(4 M0 - 2 M0 \cos[2 t \omega] + M0 \cos[2 \alpha - 2 t \omega] + M0 \cos[2 \alpha + 2 t \omega] - \right. \\
& 2 M0 \cos[\alpha - t \omega]^2 \operatorname{Sec}[\alpha]^2 - 2 M0 \cos[2 \alpha] \cos[\alpha - t \omega]^2 \operatorname{Sec}[\alpha]^2 - 2 M0 \operatorname{Sec}[\alpha]^2 \\
& \sin[t \omega]^2 - 2 M0 \cos[2 \alpha] \operatorname{Sec}[\alpha]^2 \sin[t \omega]^2 + 2 \sqrt{2} \sqrt{\left(M0^2 (6 + 2 \cos[2 \alpha] - \right. \\
& \quad \left. 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega]^2\right)} \Big) \Big) \Big) / \\
& \left(8 \sqrt{\left(M0^2 (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega]) \right. \right. \\
& \quad \left. \left. \sin[\alpha]^2 \sin[t \omega]^2\right)}\right) + \\
& \left(\sqrt{\left(\frac{1}{1 + \cos[2 \alpha]} \left(-2 + 4 M0 - 2 \cos[2 \alpha] - 2 M0 \cos[2 t \omega] + M0 \cos[2 \alpha - 2 t \omega] + \right. \right. \right. \\
& \quad \left. \left. M0 \cos[2 \alpha + 2 t \omega] + 2 \sqrt{2} \sqrt{\left(M0^2 (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \right. \right. \right. \right. \\
& \quad \left. \left. \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega]^2\right)}\right)}\right) \Big) \Big) \\
& \left(-4 M0 + 2 M0 \cos[2 t \omega] - M0 \cos[2 \alpha - 2 t \omega] - M0 \cos[2 \alpha + 2 t \omega] + \right. \\
& 2 M0 \cos[\alpha - t \omega]^2 \operatorname{Sec}[\alpha]^2 + 2 M0 \cos[2 \alpha] \cos[\alpha - t \omega]^2 \operatorname{Sec}[\alpha]^2 + 2 M0 \operatorname{Sec}[\alpha]^2 \\
& \sin[t \omega]^2 + 2 M0 \cos[2 \alpha] \operatorname{Sec}[\alpha]^2 \sin[t \omega]^2 + 2 \sqrt{2} \sqrt{\left(M0^2 (6 + 2 \cos[2 \alpha] - \right. \\
& \quad \left. 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega]^2\right)} \Big) \Big) \Big) / \\
& \left(8 \sqrt{\left(M0^2 (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega]) \right. \right. \\
& \quad \left. \left. \sin[\alpha]^2 \sin[t \omega]^2\right)}\right) \Big) \Big)
\end{aligned}$$

$$\begin{aligned}
& \sin[\alpha]^2 \sin[t \omega]^2) \Big) + \\
& s \left(- \left(\left(i M0 (1 + \cos[2 \alpha]) \sec[\alpha] \sin[t \omega]^2 \sqrt{\left(\frac{1}{1 + \cos[2 \alpha]} (-2 + 4 M0 - \right. \right. \right. \right. \\
& \quad 2 \cos[2 \alpha] - 2 M0 \cos[2 t \omega] + M0 \cos[2 \alpha - 2 t \omega] + M0 \cos[2 \alpha + 2 t \omega] - \\
& \quad 2 \sqrt{2} \sqrt{M0^2 (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \\
& \quad \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega]^2) \Big) \tan[\alpha] \Big) \Big) / \\
& \quad (2 \sqrt{M0^2 (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega])} \\
& \quad \sin[\alpha]^2 \sin[t \omega]^2) \Big) + \left(i M0 (1 + \cos[2 \alpha]) \sec[\alpha] \sin[t \omega]^2 \right. \\
& \quad \sqrt{\left(\frac{1}{1 + \cos[2 \alpha]} (-2 + 4 M0 - 2 \cos[2 \alpha] - 2 M0 \cos[2 t \omega] + M0 \cos[2 \alpha - 2 t \omega] + \right. \\
& \quad M0 \cos[2 \alpha + 2 t \omega] + 2 \sqrt{2} \sqrt{M0^2 (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \\
& \quad \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega]^2) \Big) \tan[\alpha] \Big) \Big) / \\
& \quad (2 \sqrt{M0^2 (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega])} \\
& \quad \sin[\alpha]^2 \sin[t \omega]^2) \Big) \Big) + \\
& i \left(\left(\left(\sqrt{\left(\frac{1}{1 + \cos[2 \alpha]} (-2 + 4 M0 - 2 \cos[2 \alpha] - 2 M0 \cos[2 t \omega] + M0 \cos[2 \alpha - 2 t \omega] + \right. \right. \right. \right. \\
& \quad M0 \cos[2 \alpha + 2 t \omega] - 2 \sqrt{2} \sqrt{M0^2 (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \\
& \quad \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega]^2) \Big) \Big) \right. \\
& \quad (4 M0 - 2 M0 \cos[2 t \omega] + M0 \cos[2 \alpha - 2 t \omega] + M0 \cos[2 \alpha + 2 t \omega] - \\
& \quad 2 M0 \cos[\alpha - t \omega]^2 \sec[\alpha]^2 - 2 M0 \cos[2 \alpha] \cos[\alpha - t \omega]^2 \sec[\alpha]^2 - \\
& \quad 2 M0 \sec[\alpha]^2 \sin[t \omega]^2 - 2 M0 \cos[2 \alpha] \sec[\alpha]^2 \sin[t \omega]^2 + \\
& \quad 2 \sqrt{2} \sqrt{M0^2 (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \\
& \quad \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega]^2) \Big) \Big) / \\
& \quad (8 \sqrt{M0^2 (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega])} \\
& \quad \sin[\alpha]^2 \sin[t \omega]^2) \Big) + \\
& \left(\sqrt{\left(\frac{1}{1 + \cos[2 \alpha]} (-2 + 4 M0 - 2 \cos[2 \alpha] - 2 M0 \cos[2 t \omega] + M0 \cos[2 \alpha - 2 t \omega] + \right. \right. \\
& \quad M0 \cos[2 \alpha + 2 t \omega] + 2 \sqrt{2} \sqrt{M0^2 (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \\
& \quad \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega]^2) \Big) \Big) \\
& \quad (-4 M0 + 2 M0 \cos[2 t \omega] - M0 \cos[2 \alpha - 2 t \omega] - M0 \cos[2 \alpha + 2 t \omega] + \\
& \quad 2 M0 \cos[\alpha - t \omega]^2 \sec[\alpha]^2 + 2 M0 \cos[2 \alpha] \cos[\alpha - t \omega]^2 \sec[\alpha]^2 + \\
& \quad 2 M0 \sec[\alpha]^2 \sin[t \omega]^2 + 2 M0 \cos[2 \alpha] \sec[\alpha]^2 \sin[t \omega]^2 + \\
& \quad 2 \sqrt{2} \sqrt{M0^2 (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \\
& \quad \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega]^2) \Big) \Big) /
\end{aligned}$$

$$\begin{aligned}
& \left(8 \sqrt{M^2 (6 + 2 \cos[2\alpha] - 2 \cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega])} \right. \\
& \quad \left. \sin[\alpha]^2 \sin[t\omega]^2) \right) \\
& \left(- \left(\sqrt{\left(\frac{1}{1 + \cos[2\alpha]} (-2 + 4M - 2 \cos[2\alpha] - 2M \cos[2t\omega] + M \cos[2\alpha - 2t\omega] + \right. \right. \right. \\
& \quad \left. \left. M \cos[2\alpha + 2t\omega] - 2\sqrt{2} \sqrt{M^2 (6 + 2 \cos[2\alpha] - 2 \cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega])} \sin[\alpha]^2 \sin[t\omega]^2) \right)} \right) \\
& \quad \left(4M - 2M \cos[2t\omega] + M \cos[2\alpha - 2t\omega] + M \cos[2\alpha + 2t\omega] - \right. \\
& \quad \left. 2M \cos[\alpha - t\omega]^2 \sec[\alpha]^2 - 2M \cos[2\alpha] \cos[\alpha - t\omega]^2 \sec[\alpha]^2 - 2M \sec[\alpha]^2 \right. \\
& \quad \left. \sin[t\omega]^2 - 2M \cos[2\alpha] \sec[\alpha]^2 \sin[t\omega]^2 + 2\sqrt{2} \sqrt{M^2 (6 + 2 \cos[2\alpha] - 2 \cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega])} \sin[\alpha]^2 \sin[t\omega]^2) \right) \\
& \quad \left(2M^2 \omega \cos[t\omega] (6 + 2 \cos[2\alpha] - 2 \cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega] + M^2 \sin[\alpha]^2 \sin[t\omega]^2 \right. \\
& \quad \left. (4\omega \sin[2t\omega] + 2\omega \sin[2\alpha - 2t\omega] - 2\omega \sin[2\alpha + 2t\omega]) \right) \Big/ \\
& \quad \left(16 (M^2 (6 + 2 \cos[2\alpha] - 2 \cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega]) \right. \\
& \quad \left. \sin[\alpha]^2 \sin[t\omega]^2)^{3/2} \right) - \\
& \left(\sqrt{\left(\frac{1}{1 + \cos[2\alpha]} (-2 + 4M - 2 \cos[2\alpha] - 2M \cos[2t\omega] + M \cos[2\alpha - 2t\omega] + \right. \right. \\
& \quad \left. \left. M \cos[2\alpha + 2t\omega] + 2\sqrt{2} \sqrt{M^2 (6 + 2 \cos[2\alpha] - 2 \cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega])} \sin[\alpha]^2 \sin[t\omega]^2) \right)} \right) \\
& \quad \left(-4M + 2M \cos[2t\omega] - M \cos[2\alpha - 2t\omega] - M \cos[2\alpha + 2t\omega] + \right. \\
& \quad \left. 2M \cos[\alpha - t\omega]^2 \sec[\alpha]^2 + 2M \cos[2\alpha] \cos[\alpha - t\omega]^2 \sec[\alpha]^2 + \right. \\
& \quad \left. 2M \sec[\alpha]^2 \sin[t\omega]^2 + 2M \cos[2\alpha] \sec[\alpha]^2 \sin[t\omega]^2 + \right. \\
& \quad \left. 2\sqrt{2} \sqrt{M^2 (6 + 2 \cos[2\alpha] - 2 \cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega])} \sin[\alpha]^2 \sin[t\omega]^2) \right) \left(2M^2 \omega \cos[t\omega] (6 + 2 \cos[2\alpha] - 2 \cos[2t\omega] + \right. \\
& \quad \left. \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega] + M^2 \sin[\alpha]^2 \right. \\
& \quad \left. \sin[t\omega]^2 (4\omega \sin[2t\omega] + 2\omega \sin[2\alpha - 2t\omega] - 2\omega \sin[2\alpha + 2t\omega]) \right) \Big/ \\
& \quad \left(16 (M^2 (6 + 2 \cos[2\alpha] - 2 \cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega]) \right. \\
& \quad \left. \sin[\alpha]^2 \sin[t\omega]^2)^{3/2} \right) + \\
& \left((4M - 2M \cos[2t\omega] + M \cos[2\alpha - 2t\omega] + M \cos[2\alpha + 2t\omega] - \right. \\
& \quad \left. 2M \cos[\alpha - t\omega]^2 \sec[\alpha]^2 - 2M \cos[2\alpha] \cos[\alpha - t\omega]^2 \sec[\alpha]^2 - 2M \sec[\alpha]^2 \right. \\
& \quad \left. \sin[t\omega]^2 - 2M \cos[2\alpha] \sec[\alpha]^2 \sin[t\omega]^2 + 2\sqrt{2} \sqrt{M^2 (6 + 2 \cos[2\alpha] - 2 \cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega])} \sin[\alpha]^2 \sin[t\omega]^2) \right) \\
& \quad \left(4M \omega \sin[2t\omega] + 2M \omega \sin[2\alpha - 2t\omega] - 2M \omega \sin[2\alpha + 2t\omega] - \right. \\
& \quad \left(\sqrt{2} (2M^2 \omega \cos[t\omega] (6 + 2 \cos[2\alpha] - 2 \cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega] + M^2 \sin[\alpha]^2 \sin[t\omega]^2 \right. \\
& \quad \left. (4\omega \sin[2t\omega] + 2\omega \sin[2\alpha - 2t\omega] - 2\omega \sin[2\alpha + 2t\omega]) \right) \Big/
\end{aligned}$$

$$\begin{aligned}
& \left(\sqrt{\left(M0^2 \left(6 + 2 \cos[2\alpha] - 2 \cos[2t\omega] + \cos[2\alpha - 2t\omega] + \right. \right. \right. \\
& \quad \left. \left. \cos[2\alpha + 2t\omega] \right) \sin[\alpha]^2 \sin[t\omega]^2 \right) \right) \Bigg) \Bigg/ \\
& \left(16 \left(1 + \cos[2\alpha] \right) \sqrt{\left(M0^2 \left(6 + 2 \cos[2\alpha] - 2 \cos[2t\omega] + \cos[2\alpha - 2t\omega] + \right. \right. \right. \\
& \quad \left. \left. \cos[2\alpha + 2t\omega] \right) \sin[\alpha]^2 \sin[t\omega]^2 \right) \right. \\
& \quad \left. \sqrt{\left(\frac{1}{1 + \cos[2\alpha]} \left(-2 + 4 M0 - 2 \cos[2\alpha] - 2 M0 \cos[2t\omega] + M0 \cos[2\alpha - 2t\omega] + \right. \right. \right. \right. \\
& \quad \left. \left. M0 \cos[2\alpha + 2t\omega] - 2 \sqrt{2} \sqrt{\left(M0^2 \left(6 + 2 \cos[2\alpha] - 2 \cos[2t\omega] + \right. \right. \right. \right. \\
& \quad \left. \left. \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega] \right) \sin[\alpha]^2 \sin[t\omega]^2 \right) \right) \right) \Bigg) \Bigg) + \\
& \left(\left(-4 M0 + 2 M0 \cos[2t\omega] - M0 \cos[2\alpha - 2t\omega] - M0 \cos[2\alpha + 2t\omega] + \right. \right. \\
& \quad 2 M0 \cos[\alpha - t\omega]^2 \sec[\alpha]^2 + 2 M0 \cos[2\alpha] \cos[\alpha - t\omega]^2 \sec[\alpha]^2 + 2 M0 \sec[\alpha]^2 \\
& \quad \sin[t\omega]^2 + 2 M0 \cos[2\alpha] \sec[\alpha]^2 \sin[t\omega]^2 + 2 \sqrt{2} \sqrt{\left(M0^2 \left(6 + 2 \cos[2\alpha] - \right. \right. \\
& \quad \left. \left. 2 \cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega] \right) \sin[\alpha]^2 \sin[t\omega]^2 \right) \right) \Bigg) \\
& \quad \left(4 M0 \omega \sin[2t\omega] + 2 M0 \omega \sin[2\alpha - 2t\omega] - 2 M0 \omega \sin[2\alpha + 2t\omega] + \right. \\
& \quad \left(\sqrt{2} \left(2 M0^2 \omega \cos[t\omega] \left(6 + 2 \cos[2\alpha] - 2 \cos[2t\omega] + \cos[2\alpha - 2t\omega] + \right. \right. \right. \\
& \quad \left. \left. \cos[2\alpha + 2t\omega] \right) \sin[\alpha]^2 \sin[t\omega] + M0^2 \sin[\alpha]^2 \sin[t\omega]^2 \right. \\
& \quad \left. \left(4 \omega \sin[2t\omega] + 2 \omega \sin[2\alpha - 2t\omega] - 2 \omega \sin[2\alpha + 2t\omega] \right) \right) \Bigg) \Bigg/ \\
& \quad \left(\sqrt{\left(M0^2 \left(6 + 2 \cos[2\alpha] - 2 \cos[2t\omega] + \cos[2\alpha - 2t\omega] + \right. \right. \right. \\
& \quad \left. \left. \cos[2\alpha + 2t\omega] \right) \sin[\alpha]^2 \sin[t\omega]^2 \right) \right) \Bigg) \Bigg/ \\
& \left(16 \left(1 + \cos[2\alpha] \right) \sqrt{\left(M0^2 \left(6 + 2 \cos[2\alpha] - 2 \cos[2t\omega] + \cos[2\alpha - 2t\omega] + \right. \right. \right. \\
& \quad \left. \left. \cos[2\alpha + 2t\omega] \right) \sin[\alpha]^2 \sin[t\omega]^2 \right) \right. \\
& \quad \left. \sqrt{\left(\frac{1}{1 + \cos[2\alpha]} \left(-2 + 4 M0 - 2 \cos[2\alpha] - 2 M0 \cos[2t\omega] + M0 \cos[2\alpha - 2t\omega] + \right. \right. \right. \right. \\
& \quad \left. \left. M0 \cos[2\alpha + 2t\omega] + 2 \sqrt{2} \sqrt{\left(M0^2 \left(6 + 2 \cos[2\alpha] - 2 \cos[2t\omega] + \right. \right. \right. \right. \\
& \quad \left. \left. \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega] \right) \sin[\alpha]^2 \sin[t\omega]^2 \right) \right) \right) \Bigg) \Bigg) + \\
& \left(\sqrt{\left(\frac{1}{1 + \cos[2\alpha]} \left(-2 + 4 M0 - 2 \cos[2\alpha] - 2 M0 \cos[2t\omega] + M0 \cos[2\alpha - 2t\omega] + \right. \right. \right. \right. \\
& \quad \left. \left. M0 \cos[2\alpha + 2t\omega] - 2 \sqrt{2} \sqrt{\left(M0^2 \left(6 + 2 \cos[2\alpha] - 2 \cos[2t\omega] + \right. \right. \right. \right. \\
& \quad \left. \left. \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega] \right) \sin[\alpha]^2 \sin[t\omega]^2 \right) \right) \Bigg) \Bigg) \\
& \quad \left(-4 M0 \omega \cos[t\omega] \sec[\alpha]^2 \sin[t\omega] - 4 M0 \omega \cos[2\alpha] \cos[t\omega] \sec[\alpha]^2 \right. \\
& \quad \sin[t\omega] + 4 M0 \omega \sin[2t\omega] + 2 M0 \omega \sin[2\alpha - 2t\omega] - \\
& \quad 4 M0 \omega \cos[\alpha - t\omega] \sec[\alpha]^2 \sin[\alpha - t\omega] - 4 M0 \omega \cos[2\alpha] \\
& \quad \cos[\alpha - t\omega] \sec[\alpha]^2 \sin[\alpha - t\omega] - 2 M0 \omega \sin[2\alpha + 2t\omega] + \\
& \quad \left(\sqrt{2} \left(2 M0^2 \omega \cos[t\omega] \left(6 + 2 \cos[2\alpha] - 2 \cos[2t\omega] + \cos[2\alpha - 2t\omega] + \right. \right. \right. \\
& \quad \left. \left. \cos[2\alpha + 2t\omega] \right) \sin[\alpha]^2 \sin[t\omega] + M0^2 \sin[\alpha]^2 \sin[t\omega]^2 \right. \\
& \quad \left. \left(4 \omega \sin[2t\omega] + 2 \omega \sin[2\alpha - 2t\omega] - 2 \omega \sin[2\alpha + 2t\omega] \right) \right) \Bigg) \Bigg/ \\
& \quad \left(\sqrt{\left(M0^2 \left(6 + 2 \cos[2\alpha] - 2 \cos[2t\omega] + \cos[2\alpha - 2t\omega] + \right. \right. \right. \\
& \quad \left. \left. \cos[2\alpha + 2t\omega] \right) \sin[\alpha]^2 \sin[t\omega]^2 \right) \right) \Bigg) \Bigg/
\end{aligned}$$

$$\begin{aligned}
& \left. \left(\cos[2\alpha + 2t\omega] \sin[\alpha]^2 \sin[t\omega]^2 \right) \right) \Bigg/ \\
& \left(8 \sqrt{M\theta^2 (6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega])} \right. \\
& \quad \left. \sin[\alpha]^2 \sin[t\omega]^2 \right) + \\
& \left(\sqrt{\left(\frac{1}{1 + \cos[2\alpha]} \left(-2 + 4M\theta - 2\cos[2\alpha] - 2M\theta \cos[2t\omega] + M\theta \cos[2\alpha - 2t\omega] + \right. \right. \right. \\
& \quad \left. \left. M\theta \cos[2\alpha + 2t\omega] + 2\sqrt{2} \sqrt{M\theta^2 (6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega])} \sin[\alpha]^2 \sin[t\omega]^2 \right) \right)} \right. \\
& \quad \left(4M\theta \omega \cos[t\omega] \sec[\alpha]^2 \sin[t\omega] + 4M\theta \omega \cos[2\alpha] \cos[t\omega] \sec[\alpha]^2 \right. \\
& \quad \left. \sin[t\omega] - 4M\theta \omega \sin[2t\omega] - 2M\theta \omega \sin[2\alpha - 2t\omega] + \right. \\
& \quad \left. 4M\theta \omega \cos[\alpha - t\omega] \sec[\alpha]^2 \sin[\alpha - t\omega] + 4M\theta \omega \cos[2\alpha] \right. \\
& \quad \left. \cos[\alpha - t\omega] \sec[\alpha]^2 \sin[\alpha - t\omega] + 2M\theta \omega \sin[2\alpha + 2t\omega] + \right. \\
& \quad \left(\sqrt{2} (2M\theta^2 \omega \cos[t\omega] (6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \right. \\
& \quad \left. \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega] + M\theta^2 \sin[\alpha]^2 \sin[t\omega]^2 \right. \\
& \quad \left. (4\omega \sin[2t\omega] + 2\omega \sin[2\alpha - 2t\omega] - 2\omega \sin[2\alpha + 2t\omega]) \right) \Bigg) \Bigg/ \\
& \quad \left(\sqrt{M\theta^2 (6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega])} \right. \\
& \quad \left. \cos[2\alpha + 2t\omega] \sin[\alpha]^2 \sin[t\omega]^2 \right) \Bigg) \Bigg/ \\
& \left(8 \sqrt{M\theta^2 (6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega])} \right. \\
& \quad \left. \sin[\alpha]^2 \sin[t\omega]^2 \right) \Bigg) + \\
& \left(\left(i \cos[\alpha] \cot[\alpha] \csc[t\omega]^2 \left(-4M\theta + 2M\theta \cos[2t\omega] - M\theta \cos[2\alpha - 2t\omega] - \right. \right. \right. \\
& \quad M\theta \cos[2\alpha + 2t\omega] + 2M\theta \cos[\alpha - t\omega]^2 \sec[\alpha]^2 + \\
& \quad 2M\theta \cos[2\alpha] \cos[\alpha - t\omega]^2 \sec[\alpha]^2 + 2M\theta \sec[\alpha]^2 \sin[t\omega]^2 + \\
& \quad 2M\theta \cos[2\alpha] \sec[\alpha]^2 \sin[t\omega]^2 + 2\sqrt{2} \sqrt{-M\theta^2 (-6 - 2\cos[2\alpha] + \\
& \quad 2\cos[2t\omega] - \cos[2\alpha - 2t\omega] - \cos[2\alpha + 2t\omega])} \sin[\alpha]^2 \sin[t\omega]^2 \Bigg) \right. \\
& \quad \sqrt{\left(\frac{1}{1 + \cos[2\alpha]} \left(-2 + 4M\theta - 2\cos[2\alpha] - 2M\theta \cos[2t\omega] + M\theta \cos[2\alpha - 2t\omega] + \right. \right. \\
& \quad \left. \left. M\theta \cos[2\alpha + 2t\omega] - 2\sqrt{2} \sqrt{M\theta^2 (6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega])} \sin[\alpha]^2 \sin[t\omega]^2 \right) \right)} \Bigg) \\
& \quad \left(4M\theta - 2M\theta \cos[2t\omega] + M\theta \cos[2\alpha - 2t\omega] + M\theta \cos[2\alpha + 2t\omega] - \right. \\
& \quad 2M\theta \cos[\alpha - t\omega]^2 \sec[\alpha]^2 - 2M\theta \cos[2\alpha] \cos[\alpha - t\omega]^2 \sec[\alpha]^2 - \\
& \quad 2M\theta \sec[\alpha]^2 \sin[t\omega]^2 - 2M\theta \cos[2\alpha] \sec[\alpha]^2 \sin[t\omega]^2 + \\
& \quad 2\sqrt{2} \sqrt{M\theta^2 (6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega])} \sin[\alpha]^2 \sin[t\omega]^2 \Bigg) \Bigg) \Bigg/ \\
& \quad \left(32M\theta (1 + \cos[2\alpha]) \sqrt{M\theta^2 (6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega])} \sin[\alpha]^2 \sin[t\omega]^2 \right) - \\
& \left(i \cos[\alpha] \cot[\alpha] \csc[t\omega]^2 \left(4M\theta - 2M\theta \cos[2t\omega] + M\theta \cos[2\alpha - 2t\omega] + \right. \right. \\
& \quad \left. \left. M\theta \cos[2\alpha + 2t\omega] - 2M\theta \cos[\alpha - t\omega]^2 \sec[\alpha]^2 - \right. \right.
\end{aligned}$$

$$\begin{aligned}
& 2 M0 \cos[2 \alpha] \cos[\alpha - t \omega]^2 \sec[\alpha]^2 - 2 M0 \sec[\alpha]^2 \sin[t \omega]^2 - \\
& 2 M0 \cos[2 \alpha] \sec[\alpha]^2 \sin[t \omega]^2 + 2 \sqrt{2} \sqrt{(-M0^2 (-6 - 2 \cos[2 \alpha] + \\
& 2 \cos[2 t \omega] - \cos[2 \alpha - 2 t \omega] - \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega]^2)} \\
& \sqrt{\left(\frac{1}{1 + \cos[2 \alpha]} \left(-2 + 4 M0 - 2 \cos[2 \alpha] - 2 M0 \cos[2 t \omega] + M0 \cos[2 \alpha - 2 t \omega] + \right. \right. \\
& \quad M0 \cos[2 \alpha + 2 t \omega] + 2 \sqrt{2} \sqrt{M0^2 (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \\
& \quad \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega]^2} \left. \right) \left. \right)} \\
& \left(-4 M0 + 2 M0 \cos[2 t \omega] - M0 \cos[2 \alpha - 2 t \omega] - M0 \cos[2 \alpha + 2 t \omega] + \right. \\
& 2 M0 \cos[\alpha - t \omega]^2 \sec[\alpha]^2 + 2 M0 \cos[2 \alpha] \cos[\alpha - t \omega]^2 \sec[\alpha]^2 + \\
& 2 M0 \sec[\alpha]^2 \sin[t \omega]^2 + 2 M0 \cos[2 \alpha] \sec[\alpha]^2 \sin[t \omega]^2 + \\
& 2 \sqrt{2} \sqrt{M0^2 (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \\
& \quad \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega]^2} \left. \right) \left. \right) / \\
& \left(32 M0 (1 + \cos[2 \alpha]) \sqrt{M0^2 (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \right. \\
& \quad \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega]^2} \left. \right) \left. \right) \\
& \left(- \left(\left(i M0 \omega (1 + \cos[2 \alpha]) \cos[t \omega] \sec[\alpha] \sin[t \omega] \sqrt{\left(\frac{1}{1 + \cos[2 \alpha]} \right. \right. \right. \right. \\
& \quad \left(-2 + 4 M0 - 2 \cos[2 \alpha] - 2 M0 \cos[2 t \omega] + M0 \cos[2 \alpha - 2 t \omega] + \right. \\
& \quad M0 \cos[2 \alpha + 2 t \omega] - 2 \sqrt{2} \sqrt{M0^2 (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \\
& \quad \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega]^2} \left. \right) \left. \right) \left. \right) \right. \\
& \quad \left. \left. \left. \tan[\alpha] \right) \right) / \left(\sqrt{M0^2 (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \right. \right. \\
& \quad \left. \left. \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega]^2} \right) \right) + \\
& \left(i M0 \omega (1 + \cos[2 \alpha]) \cos[t \omega] \sec[\alpha] \sin[t \omega] \sqrt{\left(\frac{1}{1 + \cos[2 \alpha]} \right. \right. \right. \\
& \quad \left(-2 + 4 M0 - 2 \cos[2 \alpha] - 2 M0 \cos[2 t \omega] + M0 \cos[2 \alpha - 2 t \omega] + \right. \\
& \quad M0 \cos[2 \alpha + 2 t \omega] + 2 \sqrt{2} \sqrt{M0^2 (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \\
& \quad \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega]^2} \left. \right) \left. \right) \left. \right) \tan[\alpha] \left. \right) / \\
& \left(\sqrt{M0^2 (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega]) \right. \\
& \quad \left. \sin[\alpha]^2 \sin[t \omega]^2} \right) + \left(i M0 (1 + \cos[2 \alpha]) \sec[\alpha] \sin[t \omega]^2 \right. \\
& \quad \left. \sqrt{\left(\frac{1}{1 + \cos[2 \alpha]} \left(-2 + 4 M0 - 2 \cos[2 \alpha] - 2 M0 \cos[2 t \omega] + M0 \cos[2 \alpha - 2 t \omega] + \right. \right. \right. \\
& \quad M0 \cos[2 \alpha + 2 t \omega] - 2 \sqrt{2} \sqrt{M0^2 (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \\
& \quad \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega]^2} \left. \right) \left. \right) \left. \right) \\
& \left(2 M0^2 \omega \cos[t \omega] (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \right. \\
& \quad \left. \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega] + M0^2 \sin[\alpha]^2 \sin[t \omega]^2 \right.
\end{aligned}$$

$$\begin{aligned}
& \left(4 \omega \sin[2 t \omega] + 2 \omega \sin[2 \alpha - 2 t \omega] - 2 \omega \sin[2 \alpha + 2 t \omega] \right) \tan[\alpha] \Bigg) / \\
& \left(4 \left(M^2 \left(6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega] \right) \right. \right. \\
& \quad \left. \sin[\alpha]^2 \sin[t \omega]^2 \right)^{3/2} - \left(i M \left(1 + \cos[2 \alpha] \right) \sec[\alpha] \sin[t \omega]^2 \right. \\
& \quad \left. \sqrt{\left(\frac{1}{1 + \cos[2 \alpha]} \left(-2 + 4 M - 2 \cos[2 \alpha] - 2 M \cos[2 t \omega] + M \cos[2 \alpha - 2 t \omega] + \right. \right. \right. \\
& \quad \left. \left. M \cos[2 \alpha + 2 t \omega] + 2 \sqrt{2} \sqrt{\left(M^2 \left(6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \right. \right. \right. \right. \\
& \quad \left. \left. \left. \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega] \right) \sin[\alpha]^2 \sin[t \omega]^2 \right)} \right) \right) \right) \\
& \quad \left(2 M^2 \omega \cos[t \omega] \left(6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \right. \right. \\
& \quad \left. \left. \cos[2 \alpha + 2 t \omega] \right) \sin[\alpha]^2 \sin[t \omega] + M^2 \sin[\alpha]^2 \sin[t \omega]^2 \right. \\
& \quad \left. \left(4 \omega \sin[2 t \omega] + 2 \omega \sin[2 \alpha - 2 t \omega] - 2 \omega \sin[2 \alpha + 2 t \omega] \right) \tan[\alpha] \right) \Bigg) / \\
& \left(4 \left(M^2 \left(6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega] \right) \right. \right. \\
& \quad \left. \sin[\alpha]^2 \sin[t \omega]^2 \right)^{3/2} - \\
& \quad \left(i M \sec[\alpha] \sin[t \omega]^2 \left(4 M \omega \sin[2 t \omega] + 2 M \omega \sin[2 \alpha - 2 t \omega] - \right. \right. \\
& \quad \left. \left. 2 M \omega \sin[2 \alpha + 2 t \omega] - \left(\sqrt{2} \left(2 M^2 \omega \cos[t \omega] \left(6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \right. \right. \right. \right. \right. \right. \\
& \quad \left. \left. \left. \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega] \right) \sin[\alpha]^2 \sin[t \omega] + M^2 \sin[\alpha]^2 \right. \right. \\
& \quad \left. \left. \sin[t \omega]^2 \left(4 \omega \sin[2 t \omega] + 2 \omega \sin[2 \alpha - 2 t \omega] - 2 \omega \sin[2 \alpha + 2 t \omega] \right) \right) \right) \right) \Bigg) / \\
& \quad \left(\sqrt{\left(M^2 \left(6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega] \right) \right. \right. \\
& \quad \left. \left. \sin[\alpha]^2 \sin[t \omega]^2 \right) \right) \tan[\alpha] \Bigg) / \\
& \left(4 \sqrt{\left(M^2 \left(6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega] \right) \right. \right. \\
& \quad \left. \sin[\alpha]^2 \sin[t \omega]^2 \right) \sqrt{\left(\frac{1}{1 + \cos[2 \alpha]} \left(-2 + 4 M - 2 \cos[2 \alpha] - 2 M \cos[2 t \omega] + \right. \right. \right. \\
& \quad \left. \left. M \cos[2 \alpha - 2 t \omega] + M \cos[2 \alpha + 2 t \omega] - 2 \sqrt{2} \sqrt{\left(M^2 \left(6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \right. \right. \right. \right. \right. \\
& \quad \left. \left. \left. \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega] \right) \sin[\alpha]^2 \sin[t \omega]^2 \right)} \right) \right) \Bigg) + \\
& \quad \left(i M \sec[\alpha] \sin[t \omega]^2 \left(4 M \omega \sin[2 t \omega] + 2 M \omega \sin[2 \alpha - 2 t \omega] - 2 M \omega \right. \right. \\
& \quad \left. \left. \sin[2 \alpha + 2 t \omega] + \left(\sqrt{2} \left(2 M^2 \omega \cos[t \omega] \left(6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \right. \right. \right. \right. \right. \right. \\
& \quad \left. \left. \left. \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega] \right) \sin[\alpha]^2 \sin[t \omega] + M^2 \sin[\alpha]^2 \right. \right. \\
& \quad \left. \left. \sin[t \omega]^2 \left(4 \omega \sin[2 t \omega] + 2 \omega \sin[2 \alpha - 2 t \omega] - 2 \omega \sin[2 \alpha + 2 t \omega] \right) \right) \right) \Bigg) / \\
& \quad \left(\sqrt{\left(M^2 \left(6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega] \right) \right. \right. \\
& \quad \left. \left. \sin[\alpha]^2 \sin[t \omega]^2 \right) \right) \tan[\alpha] \Bigg) / \\
& \left(4 \sqrt{\left(M^2 \left(6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega] \right) \right. \right. \\
& \quad \left. \sin[\alpha]^2 \sin[t \omega]^2 \right) \sqrt{\left(\frac{1}{1 + \cos[2 \alpha]} \left(-2 + 4 M - 2 \cos[2 \alpha] - 2 M \cos[2 t \omega] + \right. \right. \right. \\
& \quad \left. \left. \left(-2 + 4 M - 2 \cos[2 \alpha] - 2 M \cos[2 t \omega] + M \cos[2 \alpha - 2 t \omega] + \right. \right. \right. \\
& \quad \left. \left. \left. M \cos[2 \alpha + 2 t \omega] \right) \right) \right) \Bigg)
\end{aligned}$$

$$\begin{aligned}
& M0 \cos[2\alpha + 2t\omega] + 2\sqrt{2} \sqrt{M0^2 (6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \\
& \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2} \Big) \Big) \Big) \Big) \Big) \\
\Sigma[\alpha_, \omega_, t_, M0_, s_, r_, \theta_] := & \{ \{L11[\alpha, \omega, t, M0, s, r, \theta], L12[\alpha, \omega, t, M0, s, r, \theta]\}, \\
& \{L21[\alpha, \omega, t, M0, s, r, \theta], L22[\alpha, \omega, t, M0, s, r, \theta]\} \} \\
\nu11[\alpha_, \omega_, t_, M0_, s_, r_, \theta_] := & \frac{1}{M0} 2 \pm \sec[\alpha] \sin[t\omega]^2 \\
& \left(-s \left(\left((-4M0 + 2M0 \cos[2t\omega] - M0 \cos[2\alpha - 2t\omega] - M0 \cos[2\alpha + 2t\omega] + 2M0 \cos[\alpha - t\omega]^2 \right. \right. \right. \\
& \sec[\alpha]^2 + 2M0 \cos[2\alpha] \cos[\alpha - t\omega]^2 \sec[\alpha]^2 + 2M0 \sec[\alpha]^2 \sin[t\omega]^2 + 2 \\
& M0 \cos[2\alpha] \sec[\alpha]^2 \sin[t\omega]^2 + 2\sqrt{2} \sqrt{-M0^2 (-6 - 2\cos[2\alpha] + \\
& 2\cos[2t\omega] - \cos[2\alpha - 2t\omega] - \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2} \Big) \Big) \Big) \\
& \sqrt{\left(\frac{1}{1 + \cos[2\alpha]} (-2 + 4M0 - 2\cos[2\alpha] - 2M0 \cos[2t\omega] + M0 \cos[2\alpha - 2t\omega] + \right. \\
& M0 \cos[2\alpha + 2t\omega] - 2\sqrt{2} \sqrt{M0^2 (6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \\
& \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2} \Big) \Big) \Big) \Big) \Big) / \\
& (8 \sqrt{M0^2 (6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega]) \\
& \sin[\alpha]^2 \sin[t\omega]^2} \Big) + \\
& \left((4M0 - 2M0 \cos[2t\omega] + M0 \cos[2\alpha - 2t\omega] + M0 \cos[2\alpha + 2t\omega] - 2M0 \right. \\
& \cos[\alpha - t\omega]^2 \sec[\alpha]^2 - 2M0 \cos[2\alpha] \cos[\alpha - t\omega]^2 \sec[\alpha]^2 - 2M0 \sec[\alpha]^2 \\
& \sin[t\omega]^2 - 2M0 \cos[2\alpha] \sec[\alpha]^2 \sin[t\omega]^2 + 2\sqrt{2} \sqrt{-M0^2 (-6 - 2\cos[2\alpha] + \\
& 2\cos[2t\omega] - \cos[2\alpha - 2t\omega] - \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2} \Big) \Big) \\
& \sqrt{\left(\frac{1}{1 + \cos[2\alpha]} (-2 + 4M0 - 2\cos[2\alpha] - 2M0 \cos[2t\omega] + M0 \cos[2\alpha - 2t\omega] + \right. \\
& M0 \cos[2\alpha + 2t\omega] + 2\sqrt{2} \sqrt{M0^2 (6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \\
& \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2} \Big) \Big) \Big) \Big) \Big) / \\
& (8 \sqrt{M0^2 (6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega]) \\
& \sin[\alpha]^2 \sin[t\omega]^2} \Big) + \\
s \left(\left(\sqrt{\left(\frac{1}{1 + \cos[2\alpha]} (-2 + 4M0 - 2\cos[2\alpha] - 2M0 \cos[2t\omega] + M0 \cos[2\alpha - 2t\omega] + \right. \right. \right. \\
& M0 \cos[2\alpha + 2t\omega] - 2\sqrt{2} \sqrt{M0^2 (6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \\
& \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2} \Big) \Big) \Big) \Big) \Big) \\
& (4M0 - 2M0 \cos[2t\omega] + M0 \cos[2\alpha - 2t\omega] + M0 \cos[2\alpha + 2t\omega] - 2M0 \\
& \cos[\alpha - t\omega]^2 \sec[\alpha]^2 - 2M0 \cos[2\alpha] \cos[\alpha - t\omega]^2 \sec[\alpha]^2 - 2M0 \sec[\alpha]^2 \\
& \sin[t\omega]^2 - 2M0 \cos[2\alpha] \sec[\alpha]^2 \sin[t\omega]^2 + 2\sqrt{2} \sqrt{M0^2 (6 + 2\cos[2\alpha] - \\
& 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2} \Big) \Big) \Big) \Big) / \\
& (8 \sqrt{M0^2 (6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega])}
\end{aligned}$$

$$\begin{aligned}
& \sin[\alpha]^2 \sin[t \omega]^2) + \\
& \left(\sqrt{\left(\frac{1}{1 + \cos[2 \alpha]} \left(-2 + 4 M0 - 2 \cos[2 \alpha] - 2 M0 \cos[2 t \omega] + M0 \cos[2 \alpha - 2 t \omega] + \right. \right. \right. \\
& \quad \left. \left. \left. M0 \cos[2 \alpha + 2 t \omega] + 2 \sqrt{2} \sqrt{M0^2 (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \right. \right. \right. \\
& \quad \left. \left. \left. \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega]^2) \right) \right) \right) \\
& \left(-4 M0 + 2 M0 \cos[2 t \omega] - M0 \cos[2 \alpha - 2 t \omega] - M0 \cos[2 \alpha + 2 t \omega] + 2 M0 \right. \\
& \quad \cos[\alpha - t \omega]^2 \sec[\alpha]^2 + 2 M0 \cos[2 \alpha] \cos[\alpha - t \omega]^2 \sec[\alpha]^2 + 2 M0 \sec[\alpha]^2 \\
& \quad \sin[t \omega]^2 + 2 M0 \cos[2 \alpha] \sec[\alpha]^2 \sin[t \omega]^2 + 2 \sqrt{2} \sqrt{M0^2 (6 + 2 \cos[2 \alpha] - \\
& \quad \left. 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega]^2) \right) \right) / \\
& \left(8 \sqrt{M0^2 (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega])} \right. \\
& \quad \left. \sin[\alpha]^2 \sin[t \omega]^2) \right) - \\
& e^{-i \theta} r \left(\left(i \cos[\alpha] \cot[\alpha] \csc[t \omega]^2 \left(-4 M0 + 2 M0 \cos[2 t \omega] - M0 \cos[2 \alpha - 2 t \omega] - \right. \right. \right. \\
& \quad \left. \left. \left. M0 \cos[2 \alpha + 2 t \omega] + 2 M0 \cos[\alpha - t \omega]^2 \sec[\alpha]^2 + 2 M0 \cos[2 \alpha] \right. \right. \right. \\
& \quad \left. \left. \left. \cos[\alpha - t \omega]^2 \sec[\alpha]^2 + 2 M0 \sec[\alpha]^2 \sin[t \omega]^2 + 2 M0 \cos[2 \alpha] \right. \right. \right. \\
& \quad \left. \left. \left. \sec[\alpha]^2 \sin[t \omega]^2 + 2 \sqrt{2} \sqrt{-M0^2 (-6 - 2 \cos[2 \alpha] + 2 \cos[2 t \omega] - \right. \right. \right. \\
& \quad \left. \left. \left. \cos[2 \alpha - 2 t \omega] - \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega]^2) \right) \right) \right. \\
& \quad \left. \sqrt{\left(\frac{1}{1 + \cos[2 \alpha]} \left(-2 + 4 M0 - 2 \cos[2 \alpha] - 2 M0 \cos[2 t \omega] + M0 \cos[2 \alpha - 2 t \omega] + \right. \right. \right. \\
& \quad \left. \left. \left. M0 \cos[2 \alpha + 2 t \omega] - 2 \sqrt{2} \sqrt{M0^2 (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \right. \right. \right. \\
& \quad \left. \left. \left. \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega]^2) \right) \right) \right) \\
& \left(4 M0 - 2 M0 \cos[2 t \omega] + M0 \cos[2 \alpha - 2 t \omega] + M0 \cos[2 \alpha + 2 t \omega] - 2 M0 \right. \\
& \quad \cos[\alpha - t \omega]^2 \sec[\alpha]^2 - 2 M0 \cos[2 \alpha] \cos[\alpha - t \omega]^2 \sec[\alpha]^2 - 2 M0 \sec[\alpha]^2 \\
& \quad \sin[t \omega]^2 - 2 M0 \cos[2 \alpha] \sec[\alpha]^2 \sin[t \omega]^2 + 2 \sqrt{2} \sqrt{M0^2 (6 + 2 \cos[2 \alpha] - \\
& \quad \left. 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega]^2) \right) \right) / \\
& \left(32 M0 (1 + \cos[2 \alpha]) \sqrt{M0^2 (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \right.} \\
& \quad \left. \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega]^2) \right) - \\
& \left(i \cos[\alpha] \cot[\alpha] \csc[t \omega]^2 \left(4 M0 - 2 M0 \cos[2 t \omega] + M0 \cos[2 \alpha - 2 t \omega] + M0 \right. \right. \\
& \quad \left. \left. \cos[2 \alpha + 2 t \omega] - 2 M0 \cos[\alpha - t \omega]^2 \sec[\alpha]^2 - 2 M0 \cos[2 \alpha] \right. \right. \\
& \quad \left. \left. \cos[\alpha - t \omega]^2 \sec[\alpha]^2 - 2 M0 \sec[\alpha]^2 \sin[t \omega]^2 - 2 M0 \cos[2 \alpha] \right. \right. \\
& \quad \left. \left. \sec[\alpha]^2 \sin[t \omega]^2 + 2 \sqrt{2} \sqrt{-M0^2 (-6 - 2 \cos[2 \alpha] + 2 \cos[2 t \omega] - \right. \right. \\
& \quad \left. \left. \cos[2 \alpha - 2 t \omega] - \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega]^2) \right) \right) \\
& \quad \sqrt{\left(\frac{1}{1 + \cos[2 \alpha]} \left(-2 + 4 M0 - 2 \cos[2 \alpha] - 2 M0 \cos[2 t \omega] + M0 \cos[2 \alpha - 2 t \omega] + \right. \right. \\
& \quad \left. \left. M0 \cos[2 \alpha + 2 t \omega] + 2 \sqrt{2} \sqrt{M0^2 (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \right. \right. \\
& \quad \left. \left. \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega]^2) \right) \right)
\end{aligned}$$

$$\begin{aligned}
& \left(-4 M0 + 2 M0 \cos[2 t \omega] - M0 \cos[2 \alpha - 2 t \omega] - M0 \cos[2 \alpha + 2 t \omega] + 2 M0 \right. \\
& \quad \cos[\alpha - t \omega]^2 \sec[\alpha]^2 + 2 M0 \cos[2 \alpha] \cos[\alpha - t \omega]^2 \sec[\alpha]^2 + 2 M0 \sec[\alpha]^2 \\
& \quad \sin[t \omega]^2 + 2 M0 \cos[2 \alpha] \sec[\alpha]^2 \sin[t \omega]^2 + 2 \sqrt{2} \sqrt{M0^2 (6 + 2 \cos[2 \alpha] - \\
& \quad 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega]^2} \left. \right) \Bigg/ \\
& \left(32 M0 (1 + \cos[2 \alpha]) \sqrt{M0^2 (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \right. \\
& \quad \left. \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega]^2} \right) \Bigg) + \\
& e^{i \theta} r \left(\left(i \cos[\alpha] \cot[\alpha] \csc[t \omega]^2 \left(-4 M0 + 2 M0 \cos[2 t \omega] - M0 \cos[2 \alpha - 2 t \omega] - \right. \right. \right. \\
& \quad M0 \cos[2 \alpha + 2 t \omega] + 2 M0 \cos[\alpha - t \omega]^2 \sec[\alpha]^2 + 2 M0 \cos[2 \alpha] \\
& \quad \cos[\alpha - t \omega]^2 \sec[\alpha]^2 + 2 M0 \sec[\alpha]^2 \sin[t \omega]^2 + 2 M0 \cos[2 \alpha] \\
& \quad \sec[\alpha]^2 \sin[t \omega]^2 + 2 \sqrt{2} \sqrt{-M0^2 (-6 - 2 \cos[2 \alpha] + 2 \cos[2 t \omega] - \\
& \quad \cos[2 \alpha - 2 t \omega] - \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega]^2} \left. \right) \right) \\
& \sqrt{\left(\frac{1}{1 + \cos[2 \alpha]} \left(-2 + 4 M0 - 2 \cos[2 \alpha] - 2 M0 \cos[2 t \omega] + M0 \cos[2 \alpha - 2 t \omega] + \right. \right. \\
& \quad \left. \left. M0 \cos[2 \alpha + 2 t \omega] - 2 \sqrt{2} \sqrt{M0^2 (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \right. \right.} \\
& \quad \left. \left. \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega]^2} \right) \right) \Bigg) \\
& \left(4 M0 - 2 M0 \cos[2 t \omega] + M0 \cos[2 \alpha - 2 t \omega] + M0 \cos[2 \alpha + 2 t \omega] - 2 M0 \right. \\
& \quad \cos[\alpha - t \omega]^2 \sec[\alpha]^2 - 2 M0 \cos[2 \alpha] \cos[\alpha - t \omega]^2 \sec[\alpha]^2 - 2 M0 \sec[\alpha]^2 \\
& \quad \sin[t \omega]^2 - 2 M0 \cos[2 \alpha] \sec[\alpha]^2 \sin[t \omega]^2 + 2 \sqrt{2} \sqrt{M0^2 (6 + 2 \cos[2 \alpha] - \\
& \quad 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega]^2} \left. \right) \Bigg) \Bigg/ \\
& \left(32 M0 (1 + \cos[2 \alpha]) \sqrt{M0^2 (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \right. \\
& \quad \left. \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega]^2} \right) - \\
& \left(i \cos[\alpha] \cot[\alpha] \csc[t \omega]^2 \left(4 M0 - 2 M0 \cos[2 t \omega] + M0 \cos[2 \alpha - 2 t \omega] + M0 \right. \right. \\
& \quad \cos[2 \alpha + 2 t \omega] - 2 M0 \cos[\alpha - t \omega]^2 \sec[\alpha]^2 - 2 M0 \cos[2 \alpha] \\
& \quad \cos[\alpha - t \omega]^2 \sec[\alpha]^2 - 2 M0 \sec[\alpha]^2 \sin[t \omega]^2 - 2 M0 \cos[2 \alpha] \\
& \quad \sec[\alpha]^2 \sin[t \omega]^2 + 2 \sqrt{2} \sqrt{-M0^2 (-6 - 2 \cos[2 \alpha] + 2 \cos[2 t \omega] - \\
& \quad \cos[2 \alpha - 2 t \omega] - \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega]^2} \left. \right) \right) \\
& \sqrt{\left(\frac{1}{1 + \cos[2 \alpha]} \left(-2 + 4 M0 - 2 \cos[2 \alpha] - 2 M0 \cos[2 t \omega] + M0 \cos[2 \alpha - 2 t \omega] + \right. \right. \\
& \quad \left. \left. M0 \cos[2 \alpha + 2 t \omega] + 2 \sqrt{2} \sqrt{M0^2 (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \right. \right.} \\
& \quad \left. \left. \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega]^2} \right) \right) \Bigg) \\
& \left(-4 M0 + 2 M0 \cos[2 t \omega] - M0 \cos[2 \alpha - 2 t \omega] - M0 \cos[2 \alpha + 2 t \omega] + 2 M0 \right. \\
& \quad \cos[\alpha - t \omega]^2 \sec[\alpha]^2 + 2 M0 \cos[2 \alpha] \cos[\alpha - t \omega]^2 \sec[\alpha]^2 + 2 M0 \sec[\alpha]^2 \\
& \quad \sin[t \omega]^2 + 2 M0 \cos[2 \alpha] \sec[\alpha]^2 \sin[t \omega]^2 + 2 \sqrt{2} \sqrt{M0^2 (6 + 2 \cos[2 \alpha] - \\
& \quad 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega]^2} \left. \right) \Bigg) \Bigg/ \\
& \left(32 M0 (1 + \cos[2 \alpha]) \sqrt{M0^2 (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \right.}
\end{aligned}$$

$$\begin{aligned}
& \cos[2\alpha + 2t\omega] \sin[\alpha]^2 \sin[t\omega]^2) \Big) - \\
& i \left(- \left(\left(i \omega \cos[\alpha] \cot[\alpha] \cot[t\omega] \csc[t\omega]^2 \left(-4M\theta + 2M\theta \cos[2t\omega] - \right. \right. \right. \right. \\
& \quad M\theta \cos[2\alpha - 2t\omega] - M\theta \cos[2\alpha + 2t\omega] + 2M\theta \cos[\alpha - t\omega]^2 \sec[\alpha]^2 + \\
& \quad 2M\theta \cos[2\alpha] \cos[\alpha - t\omega]^2 \sec[\alpha]^2 + 2M\theta \sec[\alpha]^2 \sin[t\omega]^2 + \\
& \quad 2M\theta \cos[2\alpha] \sec[\alpha]^2 \sin[t\omega]^2 + 2\sqrt{2} \sqrt{-M\theta^2 (-6 - 2\cos[2\alpha] + \\
& \quad 2\cos[2t\omega] - \cos[2\alpha - 2t\omega] - \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2} \Big) \Big) \\
& \quad \sqrt{\left(\frac{1}{1 + \cos[2\alpha]} \left(-2 + 4M\theta - 2\cos[2\alpha] - 2M\theta \cos[2t\omega] + M\theta \cos[2\alpha - 2t\omega] + \right. \right.} \\
& \quad \quad M\theta \cos[2\alpha + 2t\omega] - 2\sqrt{2} \sqrt{M\theta^2 (6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \\
& \quad \quad \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2} \Big) \Big) \Big) \\
& \quad \left(4M\theta - 2M\theta \cos[2t\omega] + M\theta \cos[2\alpha - 2t\omega] + M\theta \cos[2\alpha + 2t\omega] - \right. \\
& \quad 2M\theta \cos[\alpha - t\omega]^2 \sec[\alpha]^2 - 2M\theta \cos[2\alpha] \cos[\alpha - t\omega]^2 \sec[\alpha]^2 - 2M\theta \sec[\alpha]^2 \\
& \quad \sin[t\omega]^2 - 2M\theta \cos[2\alpha] \sec[\alpha]^2 \sin[t\omega]^2 + 2\sqrt{2} \sqrt{M\theta^2 (6 + 2\cos[2\alpha] - \\
& \quad 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2} \Big) \Big) \Big) / \\
& \quad \left(16M\theta (1 + \cos[2\alpha]) \sqrt{M\theta^2 (6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \right.} \\
& \quad \quad \left. \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2} \Big) \Big) + \right. \\
& \quad \left(i \omega \cos[\alpha] \cot[\alpha] \cot[t\omega] \csc[t\omega]^2 \left(4M\theta - 2M\theta \cos[2t\omega] + M\theta \cos[2\alpha - 2t\omega] + \right. \right. \\
& \quad \quad M\theta \cos[2\alpha + 2t\omega] - 2M\theta \cos[\alpha - t\omega]^2 \sec[\alpha]^2 - 2M\theta \\
& \quad \quad \cos[2\alpha] \cos[\alpha - t\omega]^2 \sec[\alpha]^2 - 2M\theta \sec[\alpha]^2 \sin[t\omega]^2 - 2M\theta \cos[2\alpha] \\
& \quad \quad \sec[\alpha]^2 \sin[t\omega]^2 + 2\sqrt{2} \sqrt{-M\theta^2 (-6 - 2\cos[2\alpha] + 2\cos[2t\omega] - \\
& \quad \quad \cos[2\alpha - 2t\omega] - \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2} \Big) \Big) \\
& \quad \sqrt{\left(\frac{1}{1 + \cos[2\alpha]} \left(-2 + 4M\theta - 2\cos[2\alpha] - 2M\theta \cos[2t\omega] + M\theta \cos[2\alpha - 2t\omega] + \right. \right.} \\
& \quad \quad M\theta \cos[2\alpha + 2t\omega] + 2\sqrt{2} \sqrt{M\theta^2 (6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \\
& \quad \quad \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2} \Big) \Big) \Big) \\
& \quad \left(-4M\theta + 2M\theta \cos[2t\omega] - M\theta \cos[2\alpha - 2t\omega] - M\theta \cos[2\alpha + 2t\omega] + 2M\theta \right. \\
& \quad \cos[\alpha - t\omega]^2 \sec[\alpha]^2 + 2M\theta \cos[2\alpha] \cos[\alpha - t\omega]^2 \sec[\alpha]^2 + 2M\theta \sec[\alpha]^2 \\
& \quad \sin[t\omega]^2 + 2M\theta \cos[2\alpha] \sec[\alpha]^2 \sin[t\omega]^2 + 2\sqrt{2} \sqrt{M\theta^2 (6 + 2\cos[2\alpha] - \\
& \quad 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2} \Big) \Big) \Big) / \\
& \quad \left(16M\theta (1 + \cos[2\alpha]) \sqrt{M\theta^2 (6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \right.} \\
& \quad \quad \left. \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2} \Big) \Big) - \right. \\
& \quad \left(i \cos[\alpha] \cot[\alpha] \csc[t\omega]^2 \left(-4M\theta + 2M\theta \cos[2t\omega] - M\theta \cos[2\alpha - 2t\omega] - \right. \right. \\
& \quad \quad M\theta \cos[2\alpha + 2t\omega] + 2M\theta \cos[\alpha - t\omega]^2 \sec[\alpha]^2 + 2M\theta \cos[2\alpha] \\
& \quad \quad \cos[\alpha - t\omega]^2 \sec[\alpha]^2 + 2M\theta \sec[\alpha]^2 \sin[t\omega]^2 + 2M\theta \cos[2\alpha] \\
& \quad \quad \sec[\alpha]^2 \sin[t\omega]^2 + 2\sqrt{2} \sqrt{-M\theta^2 (-6 - 2\cos[2\alpha] + 2\cos[2t\omega] - \\
& \quad \quad \cos[2\alpha - 2t\omega] - \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2} \Big) \Big)
\end{aligned}$$

$$\begin{aligned}
& \cos[2\alpha - 2t\omega] - \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2) \Big) \\
& \sqrt{\left(\frac{1}{1 + \cos[2\alpha]} \left(-2 + 4M\theta - 2\cos[2\alpha] - 2M\theta \cos[2t\omega] + M\theta \cos[2\alpha - 2t\omega] + \right. \right. \\
& \quad M\theta \cos[2\alpha + 2t\omega] - 2\sqrt{2} \sqrt{M\theta^2 (6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2} \Big) \Big) \\
& \quad (4M\theta - 2M\theta \cos[2t\omega] + M\theta \cos[2\alpha - 2t\omega] + M\theta \cos[2\alpha + 2t\omega] - 2M\theta \\
& \quad \cos[\alpha - t\omega]^2 \sec[\alpha]^2 - 2M\theta \cos[2\alpha] \cos[\alpha - t\omega]^2 \sec[\alpha]^2 - 2M\theta \sec[\alpha]^2 \\
& \quad \sin[t\omega]^2 - 2M\theta \cos[2\alpha] \sec[\alpha]^2 \sin[t\omega]^2 + 2\sqrt{2} \sqrt{M\theta^2 (6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2} \Big) \\
& \quad (2M\theta^2 \omega \cos[t\omega] (6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega] + M\theta^2 \sin[\alpha]^2 \sin[t\omega]^2 \\
& \quad (4\omega \sin[2t\omega] + 2\omega \sin[2\alpha - 2t\omega] - 2\omega \sin[2\alpha + 2t\omega])) \Big) \Big) / \\
& \quad (64M\theta (1 + \cos[2\alpha]) (M\theta^2 (6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2)^{3/2}) + \\
& \quad (i \cos[\alpha] \cot[\alpha] \csc[t\omega]^2 (4M\theta - 2M\theta \cos[2t\omega] + M\theta \cos[2\alpha - 2t\omega] + M\theta \\
& \quad \cos[2\alpha + 2t\omega] - 2M\theta \cos[\alpha - t\omega]^2 \sec[\alpha]^2 - 2M\theta \cos[2\alpha] \\
& \quad \cos[\alpha - t\omega]^2 \sec[\alpha]^2 - 2M\theta \sec[\alpha]^2 \sin[t\omega]^2 - 2M\theta \cos[2\alpha] \\
& \quad \sec[\alpha]^2 \sin[t\omega]^2 + 2\sqrt{2} \sqrt{-M\theta^2 (-6 - 2\cos[2\alpha] + 2\cos[2t\omega] - \cos[2\alpha - 2t\omega] - \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2} \Big) \\
& \quad \sqrt{\left(\frac{1}{1 + \cos[2\alpha]} \left(-2 + 4M\theta - 2\cos[2\alpha] - 2M\theta \cos[2t\omega] + M\theta \cos[2\alpha - 2t\omega] + \right. \right. \\
& \quad M\theta \cos[2\alpha + 2t\omega] + 2\sqrt{2} \sqrt{M\theta^2 (6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2} \Big) \Big) \\
& \quad (-4M\theta + 2M\theta \cos[2t\omega] - M\theta \cos[2\alpha - 2t\omega] - M\theta \cos[2\alpha + 2t\omega] + 2M\theta \\
& \quad \cos[\alpha - t\omega]^2 \sec[\alpha]^2 + 2M\theta \cos[2\alpha] \cos[\alpha - t\omega]^2 \sec[\alpha]^2 + 2M\theta \sec[\alpha]^2 \\
& \quad \sin[t\omega]^2 + 2M\theta \cos[2\alpha] \sec[\alpha]^2 \sin[t\omega]^2 + 2\sqrt{2} \sqrt{M\theta^2 (6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2} \Big) \\
& \quad (2M\theta^2 \omega \cos[t\omega] (6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega] + M\theta^2 \sin[\alpha]^2 \sin[t\omega]^2 \\
& \quad (4\omega \sin[2t\omega] + 2\omega \sin[2\alpha - 2t\omega] - 2\omega \sin[2\alpha + 2t\omega])) \Big) \Big) / \\
& \quad (64M\theta (1 + \cos[2\alpha]) (M\theta^2 (6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2)^{3/2}) + \\
& \quad (i \cos[\alpha] \cot[\alpha] \csc[t\omega]^2 (-4M\theta + 2M\theta \cos[2t\omega] - M\theta \cos[2\alpha - 2t\omega] - \\
& \quad M\theta \cos[2\alpha + 2t\omega] + 2M\theta \cos[\alpha - t\omega]^2 \sec[\alpha]^2 + 2M\theta \cos[2\alpha] \\
& \quad \cos[\alpha - t\omega]^2 \sec[\alpha]^2 + 2M\theta \sec[\alpha]^2 \sin[t\omega]^2 + 2M\theta \cos[2\alpha] \\
& \quad \sec[\alpha]^2 \sin[t\omega]^2 + 2\sqrt{2} \sqrt{-M\theta^2 (-6 - 2\cos[2\alpha] + 2\cos[2t\omega] - \cos[2\alpha - 2t\omega] - \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2} \Big)
\end{aligned}$$

$$\begin{aligned}
& \left(4 M_0 - 2 M_0 \cos[2 t \omega] + M_0 \cos[2 \alpha - 2 t \omega] + M_0 \cos[2 \alpha + 2 t \omega] - 2 M_0 \right. \\
& \quad \cos[\alpha - t \omega]^2 \sec[\alpha]^2 - 2 M_0 \cos[2 \alpha] \cos[\alpha - t \omega]^2 \sec[\alpha]^2 - 2 M_0 \sec[\alpha]^2 \\
& \quad \sin[t \omega]^2 - 2 M_0 \cos[2 \alpha] \sec[\alpha]^2 \sin[t \omega]^2 + 2 \sqrt{2} \sqrt{M_0^2 (6 + 2 \cos[2 \alpha] - \\
& \quad 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega]^2} \left. \right) \\
& \left(4 M_0 \omega \sin[2 t \omega] + 2 M_0 \omega \sin[2 \alpha - 2 t \omega] - 2 M_0 \omega \sin[2 \alpha + 2 t \omega] - \right. \\
& \quad \left(\sqrt{2} (2 M_0^2 \omega \cos[t \omega] (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \right. \\
& \quad \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega] + M_0^2 \sin[\alpha]^2 \sin[t \omega]^2 \\
& \quad (4 \omega \sin[2 t \omega] + 2 \omega \sin[2 \alpha - 2 t \omega] - 2 \omega \sin[2 \alpha + 2 t \omega])) \left. \right) / \\
& \quad \left(\sqrt{M_0^2 (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega]^2} \right) \left. \right) / \\
& \left(64 M_0 (1 + \cos[2 \alpha])^2 \sqrt{M_0^2 (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \right. \\
& \quad \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega]^2} \\
& \quad \sqrt{\left(\frac{1}{1 + \cos[2 \alpha]} (-2 + 4 M_0 - 2 \cos[2 \alpha] - 2 M_0 \cos[2 t \omega] + M_0 \cos[2 \alpha - 2 t \omega] + \right. \\
& \quad M_0 \cos[2 \alpha + 2 t \omega] - 2 \sqrt{2} \sqrt{M_0^2 (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega]^2} \right) \left. \right) - \\
& \quad \left(i \cos[\alpha] \cot[\alpha] \csc[t \omega]^2 (4 M_0 - 2 M_0 \cos[2 t \omega] + M_0 \cos[2 \alpha - 2 t \omega] + M_0 \right. \\
& \quad \cos[2 \alpha + 2 t \omega] - 2 M_0 \cos[\alpha - t \omega]^2 \sec[\alpha]^2 - 2 M_0 \cos[2 \alpha] \cos[\alpha - t \omega]^2 \sec[\alpha]^2 - 2 M_0 \sec[\alpha]^2 \sin[t \omega]^2 - 2 M_0 \cos[2 \alpha] \\
& \quad \sec[\alpha]^2 \sin[t \omega]^2 + 2 \sqrt{2} \sqrt{-M_0^2 (-6 - 2 \cos[2 \alpha] + 2 \cos[2 t \omega] - \cos[2 \alpha - 2 t \omega] - \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega]^2} \left. \right) \\
& \quad (-4 M_0 + 2 M_0 \cos[2 t \omega] - M_0 \cos[2 \alpha - 2 t \omega] - M_0 \cos[2 \alpha + 2 t \omega] + 2 M_0 \\
& \quad \cos[\alpha - t \omega]^2 \sec[\alpha]^2 + 2 M_0 \cos[2 \alpha] \cos[\alpha - t \omega]^2 \sec[\alpha]^2 + 2 M_0 \sec[\alpha]^2 \sin[t \omega]^2 + 2 M_0 \cos[2 \alpha] \sec[\alpha]^2 \sin[t \omega]^2 + 2 \sqrt{2} \sqrt{M_0^2 (6 + 2 \cos[2 \alpha] - \\
& \quad 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega]^2} \left. \right) \\
& \quad (4 M_0 \omega \sin[2 t \omega] + 2 M_0 \omega \sin[2 \alpha - 2 t \omega] - 2 M_0 \omega \sin[2 \alpha + 2 t \omega] + \\
& \quad \left(\sqrt{2} (2 M_0^2 \omega \cos[t \omega] (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \right. \\
& \quad \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega] + M_0^2 \sin[\alpha]^2 \sin[t \omega]^2 \\
& \quad (4 \omega \sin[2 t \omega] + 2 \omega \sin[2 \alpha - 2 t \omega] - 2 \omega \sin[2 \alpha + 2 t \omega])) \left. \right) / \\
& \quad \left(\sqrt{M_0^2 (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega]^2} \right) \left. \right) / \\
& \left(64 M_0 (1 + \cos[2 \alpha])^2 \sqrt{M_0^2 (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \right. \\
& \quad \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega]^2} \\
& \quad \sqrt{\left(\frac{1}{1 + \cos[2 \alpha]} (-2 + 4 M_0 - 2 \cos[2 \alpha] - 2 M_0 \cos[2 t \omega] + M_0 \cos[2 \alpha - 2 t \omega] + \right. \\
& \quad M_0 \cos[2 \alpha + 2 t \omega] + 2 \sqrt{2} \sqrt{M_0^2 (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega]^2} \right) \left. \right) -
\end{aligned}$$

$$\begin{aligned}
& \left. \left. \left. \left. \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega] \right) \sin[\alpha]^2 \sin[t\omega]^2 \right) \right) \right) + \\
& \left(i \cos[\alpha] \cot[\alpha] \csc[t\omega]^2 \left(-4M\theta + 2M\theta \cos[2t\omega] - M\theta \cos[2\alpha - 2t\omega] - \right. \right. \\
& \quad M\theta \cos[2\alpha + 2t\omega] + 2M\theta \cos[\alpha - t\omega]^2 \sec[\alpha]^2 + 2M\theta \cos[2\alpha] \\
& \quad \cos[\alpha - t\omega]^2 \sec[\alpha]^2 + 2M\theta \sec[\alpha]^2 \sin[t\omega]^2 + 2M\theta \cos[2\alpha] \\
& \quad \sec[\alpha]^2 \sin[t\omega]^2 + 2\sqrt{2} \sqrt{-M\theta^2 (-6 - 2\cos[2\alpha] + 2\cos[2t\omega] - \\
& \quad \cos[2\alpha - 2t\omega] - \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2} \left. \right) \right) \\
& \sqrt{\left(\frac{1}{1 + \cos[2\alpha]} \left(-2 + 4M\theta - 2\cos[2\alpha] - 2M\theta \cos[2t\omega] + M\theta \cos[2\alpha - 2t\omega] + \right. \right. \\
& \quad M\theta \cos[2\alpha + 2t\omega] - 2\sqrt{2} \sqrt{M\theta^2 (6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \\
& \quad \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2} \left. \right) \right) \\
& \left(-4M\theta \omega \cos[t\omega] \sec[\alpha]^2 \sin[t\omega] - 4M\theta \omega \cos[2\alpha] \cos[t\omega] \sec[\alpha]^2 \right. \\
& \quad \sin[t\omega] + 4M\theta \omega \sin[2t\omega] + 2M\theta \omega \sin[2\alpha - 2t\omega] - 4M\theta \omega \cos[\alpha - t\omega] \\
& \quad \sec[\alpha]^2 \sin[\alpha - t\omega] - 4M\theta \omega \cos[2\alpha] \cos[\alpha - t\omega] \sec[\alpha]^2 \sin[\alpha - t\omega] - 2 \\
& \quad M\theta \omega \sin[2\alpha + 2t\omega] + \left(\sqrt{2} (2M\theta^2 \omega \cos[t\omega] (6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \right. \\
& \quad \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega] + M\theta^2 \sin[\alpha]^2 \\
& \quad \sin[t\omega]^2 (4\omega \sin[2t\omega] + 2\omega \sin[2\alpha - 2t\omega] - 2\omega \sin[2\alpha + 2t\omega]) \left. \right) \left. \right) / \\
& \left(\sqrt{M\theta^2 (6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2} \right) \left. \right) / \\
& (32M\theta (1 + \cos[2\alpha]) \sqrt{M\theta^2 (6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \\
& \quad \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2}) - \\
& \left(i \cos[\alpha] \cot[\alpha] \csc[t\omega]^2 \left(4M\theta - 2M\theta \cos[2t\omega] + M\theta \cos[2\alpha - 2t\omega] + M\theta \right. \right. \\
& \quad \cos[2\alpha + 2t\omega] - 2M\theta \cos[\alpha - t\omega]^2 \sec[\alpha]^2 - 2M\theta \cos[2\alpha] \\
& \quad \cos[\alpha - t\omega]^2 \sec[\alpha]^2 - 2M\theta \sec[\alpha]^2 \sin[t\omega]^2 - 2M\theta \cos[2\alpha] \\
& \quad \sec[\alpha]^2 \sin[t\omega]^2 + 2\sqrt{2} \sqrt{-M\theta^2 (-6 - 2\cos[2\alpha] + 2\cos[2t\omega] - \\
& \quad \cos[2\alpha - 2t\omega] - \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2} \left. \right) \right) \\
& \sqrt{\left(\frac{1}{1 + \cos[2\alpha]} \left(-2 + 4M\theta - 2\cos[2\alpha] - 2M\theta \cos[2t\omega] + M\theta \cos[2\alpha - 2t\omega] + \right. \right. \\
& \quad M\theta \cos[2\alpha + 2t\omega] + 2\sqrt{2} \sqrt{M\theta^2 (6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \\
& \quad \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2} \left. \right) \right) \\
& \left(4M\theta \omega \cos[t\omega] \sec[\alpha]^2 \sin[t\omega] + 4M\theta \omega \cos[2\alpha] \cos[t\omega] \sec[\alpha]^2 \right. \\
& \quad \sin[t\omega] - 4M\theta \omega \sin[2t\omega] - 2M\theta \omega \sin[2\alpha - 2t\omega] + 4M\theta \omega \cos[\alpha - t\omega] \\
& \quad \sec[\alpha]^2 \sin[\alpha - t\omega] + 4M\theta \omega \cos[2\alpha] \cos[\alpha - t\omega] \sec[\alpha]^2 \sin[\alpha - t\omega] + 2 \\
& \quad M\theta \omega \sin[2\alpha + 2t\omega] + \left(\sqrt{2} (2M\theta^2 \omega \cos[t\omega] (6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \right. \\
& \quad \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega] + M\theta^2 \sin[\alpha]^2 \\
& \quad \sin[t\omega]^2 (4\omega \sin[2t\omega] + 2\omega \sin[2\alpha - 2t\omega] - 2\omega \sin[2\alpha + 2t\omega]) \left. \right) \left. \right) / \\
& \left(\sqrt{M\theta^2 (6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2} \right) \left. \right) /
\end{aligned}$$

$$\begin{aligned}
& \left(2 \cos[2 t \omega] - \cos[2 \alpha - 2 t \omega] - \cos[2 \alpha + 2 t \omega] \right) \sin[\alpha]^2 \sin[t \omega]^2 \Big) \\
& \sqrt{\left(\frac{1}{1 + \cos[2 \alpha]} \left(-2 + 4 M \theta - 2 \cos[2 \alpha] - 2 M \theta \cos[2 t \omega] + M \theta \cos[2 \alpha - 2 t \omega] + \right. \right. \\
& \quad M \theta \cos[2 \alpha + 2 t \omega] - 2 \sqrt{2} \sqrt{M \theta^2 (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega]^2} \Big) \Big) \\
& \quad \left(2 M \theta^2 \omega \cos[t \omega] (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega] + M \theta^2 \sin[\alpha]^2 \sin[t \omega]^2 \right. \\
& \quad \left. (4 \omega \sin[2 t \omega] + 2 \omega \sin[2 \alpha - 2 t \omega] - 2 \omega \sin[2 \alpha + 2 t \omega]) \right) \Big) / \\
& \quad \left(16 (M \theta^2 (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega]^2)^{3/2} \right) \Big) - \\
& \quad \left(\left(4 M \theta - 2 M \theta \cos[2 t \omega] + M \theta \cos[2 \alpha - 2 t \omega] + M \theta \cos[2 \alpha + 2 t \omega] - 2 M \theta \right. \right. \\
& \quad \cos[\alpha - t \omega]^2 \sec[\alpha]^2 - 2 M \theta \cos[2 \alpha] \cos[\alpha - t \omega]^2 \sec[\alpha]^2 - 2 M \theta \sec[\alpha]^2 \sin[t \omega]^2 - 2 M \theta \cos[2 \alpha] \sec[\alpha]^2 \sin[t \omega]^2 + 2 \sqrt{2} \sqrt{-M \theta^2 (-6 - 2 \cos[2 \alpha] + 2 \cos[2 t \omega] - \cos[2 \alpha - 2 t \omega] - \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega]^2} \Big) \Big) \\
& \quad \sqrt{\left(\frac{1}{1 + \cos[2 \alpha]} \left(-2 + 4 M \theta - 2 \cos[2 \alpha] - 2 M \theta \cos[2 t \omega] + M \theta \cos[2 \alpha - 2 t \omega] + \right. \right. \\
& \quad M \theta \cos[2 \alpha + 2 t \omega] + 2 \sqrt{2} \sqrt{M \theta^2 (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega]^2} \Big) \Big) \\
& \quad \left(2 M \theta^2 \omega \cos[t \omega] (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega] + M \theta^2 \sin[\alpha]^2 \sin[t \omega]^2 \right. \\
& \quad \left. (4 \omega \sin[2 t \omega] + 2 \omega \sin[2 \alpha - 2 t \omega] - 2 \omega \sin[2 \alpha + 2 t \omega]) \right) \Big) / \\
& \quad \left(16 (M \theta^2 (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega]^2)^{3/2} \right) + \\
& \quad \left(\left(-4 M \theta + 2 M \theta \cos[2 t \omega] - M \theta \cos[2 \alpha - 2 t \omega] - M \theta \cos[2 \alpha + 2 t \omega] + 2 M \theta \right. \right. \\
& \quad \cos[\alpha - t \omega]^2 \sec[\alpha]^2 + 2 M \theta \cos[2 \alpha] \cos[\alpha - t \omega]^2 \sec[\alpha]^2 + 2 M \theta \sec[\alpha]^2 \sin[t \omega]^2 + 2 M \theta \cos[2 \alpha] \sec[\alpha]^2 \sin[t \omega]^2 + 2 \sqrt{2} \sqrt{-M \theta^2 (-6 - 2 \cos[2 \alpha] + 2 \cos[2 t \omega] - \cos[2 \alpha - 2 t \omega] - \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega]^2} \Big) \Big) \\
& \quad \left(4 M \theta \omega \sin[2 t \omega] + 2 M \theta \omega \sin[2 \alpha - 2 t \omega] - 2 M \theta \omega \sin[2 \alpha + 2 t \omega] - \right. \\
& \quad \left(\sqrt{2} (2 M \theta^2 \omega \cos[t \omega] (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega] + M \theta^2 \sin[\alpha]^2 \sin[t \omega]^2 \right. \\
& \quad \left. (4 \omega \sin[2 t \omega] + 2 \omega \sin[2 \alpha - 2 t \omega] - 2 \omega \sin[2 \alpha + 2 t \omega]) \right) \Big) / \\
& \quad \left(\sqrt{M \theta^2 (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega]^2} \right) \Big) / \\
& \quad \left(16 (1 + \cos[2 \alpha]) \sqrt{M \theta^2 (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega]^2} \right)
\end{aligned}$$

$$\begin{aligned}
& \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2) \\
& \sqrt{\left(\frac{1}{1 + \cos[2\alpha]} \left(-2 + 4M\theta - 2\cos[2\alpha] - 2M\theta \cos[2t\omega] + M\theta \cos[2\alpha - 2t\omega] + \right.\right. \\
& \quad \left.M\theta \cos[2\alpha + 2t\omega] - 2\sqrt{2} \sqrt{M\theta^2 (6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \right.} \\
& \quad \left.\left.\cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2)\right)\right)} + \\
& \left(4M\theta - 2M\theta \cos[2t\omega] + M\theta \cos[2\alpha - 2t\omega] + M\theta \cos[2\alpha + 2t\omega] - 2M\theta \right. \\
& \quad \cos[\alpha - t\omega]^2 \sec[\alpha]^2 - 2M\theta \cos[2\alpha] \cos[\alpha - t\omega]^2 \sec[\alpha]^2 - 2M\theta \sec[\alpha]^2 \\
& \quad \sin[t\omega]^2 - 2M\theta \cos[2\alpha] \sec[\alpha]^2 \sin[t\omega]^2 + 2\sqrt{2} \sqrt{-M\theta^2 (-6 - 2\cos[2\alpha] + \\
& \quad \left.2\cos[2t\omega] - \cos[2\alpha - 2t\omega] - \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2)}\right) \\
& \left(4M\theta \omega \sin[2t\omega] + 2M\theta \omega \sin[2\alpha - 2t\omega] - 2M\theta \omega \sin[2\alpha + 2t\omega] + \right. \\
& \quad \left(\sqrt{2} (2M\theta^2 \omega \cos[t\omega] (6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \right. \\
& \quad \left.\cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega] + M\theta^2 \sin[\alpha]^2 \sin[t\omega]^2 \right. \\
& \quad \left.(4\omega \sin[2t\omega] + 2\omega \sin[2\alpha - 2t\omega] - 2\omega \sin[2\alpha + 2t\omega])\right) \Big) / \\
& \left(\sqrt{M\theta^2 (6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2}\right) \Big) / \\
& \left(16 (1 + \cos[2\alpha]) \sqrt{M\theta^2 (6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \right. \\
& \quad \left.\cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2)} \right. \\
& \sqrt{\left(\frac{1}{1 + \cos[2\alpha]} \left(-2 + 4M\theta - 2\cos[2\alpha] - 2M\theta \cos[2t\omega] + M\theta \cos[2\alpha - 2t\omega] + \right.\right. \\
& \quad \left.M\theta \cos[2\alpha + 2t\omega] + 2\sqrt{2} \sqrt{M\theta^2 (6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \right.} \\
& \quad \left.\left.\cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2)\right)\right)} + \\
& \left(\sqrt{\left(\frac{1}{1 + \cos[2\alpha]} \left(-2 + 4M\theta - 2\cos[2\alpha] - 2M\theta \cos[2t\omega] + M\theta \cos[2\alpha - 2t\omega] + \right.\right. \right. \\
& \quad \left.M\theta \cos[2\alpha + 2t\omega] + 2\sqrt{2} \sqrt{M\theta^2 (6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \right.} \\
& \quad \left.\left.\cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2)\right)\right)} \\
& \left(-4M\theta \omega \cos[t\omega] \sec[\alpha]^2 \sin[t\omega] - 4M\theta \omega \cos[2\alpha] \cos[t\omega] \sec[\alpha]^2 \right. \\
& \quad \sin[t\omega] + 4M\theta \omega \sin[2t\omega] + 2M\theta \omega \sin[2\alpha - 2t\omega] - 4M\theta \omega \cos[\alpha - t\omega] \\
& \quad \sec[\alpha]^2 \sin[\alpha - t\omega] - 4M\theta \omega \cos[2\alpha] \cos[\alpha - t\omega] \sec[\alpha]^2 \sin[\alpha - t\omega] - 2M\theta \\
& \quad \omega \sin[2\alpha + 2t\omega] + \left(\sqrt{2} (-2M\theta^2 \omega \cos[t\omega] (-6 - 2\cos[2\alpha] + 2\cos[2t\omega] - \right. \\
& \quad \left.\cos[2\alpha - 2t\omega] - \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega] - M\theta^2 \sin[\alpha]^2 \right. \\
& \quad \left.\sin[t\omega]^2 (-4\omega \sin[2t\omega] - 2\omega \sin[2\alpha - 2t\omega] + 2\omega \sin[2\alpha + 2t\omega])\right) \Big) / \\
& \left(\sqrt{-M\theta^2 (-6 - 2\cos[2\alpha] + 2\cos[2t\omega] - \cos[2\alpha - 2t\omega] - \right. \\
& \quad \left.\cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2}\right) \Big) / \\
& \left(8 \sqrt{M\theta^2 (6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega]) \right. \\
& \quad \left.\sin[\alpha]^2 \sin[t\omega]^2}\right) +
\end{aligned}$$

$$\begin{aligned}
& \left(\sqrt{\left(\frac{1}{1 + \cos[2\alpha]} \left(-2 + 4M0 - 2\cos[2\alpha] - 2M0\cos[2t\omega] + M0\cos[2\alpha - 2t\omega] + \right. \right. \right. \\
& \quad \left. \left. \left. M0\cos[2\alpha + 2t\omega] - 2\sqrt{2}\sqrt{M0^2(6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \right. \right. \right. \\
& \quad \left. \left. \left. \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega])\sin[\alpha]^2\sin[t\omega]^2} \right) \right)} \right) \\
& \left(4M0\omega\cos[t\omega]\sec[\alpha]^2\sin[t\omega] + 4M0\omega\cos[2\alpha]\cos[t\omega]\sec[\alpha]^2 \right. \\
& \quad \sin[t\omega] - 4M0\omega\sin[2t\omega] - 2M0\omega\sin[2\alpha - 2t\omega] + 4M0\omega\cos[\alpha - t\omega] \\
& \quad \sec[\alpha]^2\sin[\alpha - t\omega] + 4M0\omega\cos[2\alpha]\cos[\alpha - t\omega]\sec[\alpha]^2\sin[\alpha - t\omega] + 2M0 \\
& \quad \omega\sin[2\alpha + 2t\omega] + \left(\sqrt{2}(-2M0^2\omega\cos[t\omega](-6 - 2\cos[2\alpha] + 2\cos[2t\omega] - \right. \\
& \quad \left. \cos[2\alpha - 2t\omega] - \cos[2\alpha + 2t\omega])\sin[\alpha]^2\sin[t\omega] - M0^2\sin[\alpha]^2 \right. \\
& \quad \left. \sin[t\omega]^2(-4\omega\sin[2t\omega] - 2\omega\sin[2\alpha - 2t\omega] + 2\omega\sin[2\alpha + 2t\omega]) \right) \Big) \Big) / \\
& \left(\sqrt{(-M0^2(-6 - 2\cos[2\alpha] + 2\cos[2t\omega] - \cos[2\alpha - 2t\omega] - \right. \\
& \quad \left. \cos[2\alpha + 2t\omega])\sin[\alpha]^2\sin[t\omega]^2)} \right) \Big) \Big) / \\
& \left(8\sqrt{M0^2(6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega])} \right. \\
& \quad \left. \sin[\alpha]^2\sin[t\omega]^2) \right) \Big) + \\
& s \left(- \left(\left(i M0(1 + \cos[2\alpha])\sec[\alpha]\sin[t\omega]^2 \sqrt{\left(\frac{1}{1 + \cos[2\alpha]} \left(-2 + 4M0 - \right. \right. \right. \right. \right. \\
& \quad \left. \left. \left. 2\cos[2\alpha] - 2M0\cos[2t\omega] + M0\cos[2\alpha - 2t\omega] + M0\cos[2\alpha + 2t\omega] - \right. \right. \right. \\
& \quad \left. \left. \left. 2\sqrt{2}\sqrt{M0^2(6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \right. \right. \right. \\
& \quad \left. \left. \left. \cos[2\alpha + 2t\omega])\sin[\alpha]^2\sin[t\omega]^2} \right) \right)} \right) \tan[\alpha] \right) \Big) / \\
& \left(2\sqrt{M0^2(6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega])} \right. \\
& \quad \left. \sin[\alpha]^2\sin[t\omega]^2) \right) \Big) + \\
& \left(i M0(1 + \cos[2\alpha])\sec[\alpha]\sin[t\omega]^2 \sqrt{\left(\frac{1}{1 + \cos[2\alpha]} \left(-2 + 4M0 - 2\cos[2\alpha] - \right. \right. \right. \\
& \quad \left. \left. \left. 2M0\cos[2t\omega] + M0\cos[2\alpha - 2t\omega] + M0\cos[2\alpha + 2t\omega] + \right. \right. \right. \\
& \quad \left. \left. \left. 2\sqrt{2}\sqrt{M0^2(6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \right. \right. \right. \\
& \quad \left. \left. \left. \cos[2\alpha + 2t\omega])\sin[\alpha]^2\sin[t\omega]^2} \right) \right)} \right) \tan[\alpha] \right) \Big) / \\
& \left(2\sqrt{M0^2(6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega])} \right. \\
& \quad \left. \sin[\alpha]^2\sin[t\omega]^2) \right) \Big) \Big) \Big) \\
& \nu_{12}[\alpha_, \omega_, t_, M0_, s_, r_, \theta_] := i \left(\frac{1}{M0} \sec[\alpha]^2 (\cos[\alpha + t\omega]^2 + \sin[t\omega]^2) \right. \\
& \quad \left(-s \left(\left((-4M0 + 2M0\cos[2t\omega] - M0\cos[2\alpha - 2t\omega] - M0\cos[2\alpha + 2t\omega] + 2M0\cos[\alpha - t\omega])^2 \right. \right. \right. \\
& \quad \left. \left. \left. \sec[\alpha]^2 + 2M0\cos[2\alpha]\cos[\alpha - t\omega]^2\sec[\alpha]^2 + 2M0\sec[\alpha]^2\sin[t\omega]^2 + 2 \right. \right. \right. \\
& \quad \left. \left. \left. M0\cos[2\alpha]\sec[\alpha]^2\sin[t\omega]^2 + 2\sqrt{2}\sqrt{(-M0^2(-6 - 2\cos[2\alpha] + \right. \right. \right. \\
& \quad \left. \left. \left. 2\cos[2t\omega] - \cos[2\alpha - 2t\omega] - \cos[2\alpha + 2t\omega])\sin[\alpha]^2\sin[t\omega]^2} \right) \right)} \right) \right) \Big) \Big)
\end{aligned}$$

$$\begin{aligned}
& \sqrt{\left(\frac{1}{1 + \cos[2\alpha]} \left(-2 + 4M\theta - 2\cos[2\alpha] - 2M\theta\cos[2t\omega] + M\theta\cos[2\alpha - 2t\omega] + \right. \right. \\
& \quad \left. \left. M\theta\cos[2\alpha + 2t\omega] - 2\sqrt{2}\sqrt{M\theta^2(6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \right. \right.} \\
& \quad \left. \left. \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega])\sin[\alpha]^2\sin[t\omega]^2) \right) \right) \Bigg) \Bigg) / \\
& (8\sqrt{M\theta^2(6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega])\sin[\alpha]^2\sin[t\omega]^2}) + \\
& \left((4M\theta - 2M\theta\cos[2t\omega] + M\theta\cos[2\alpha - 2t\omega] + M\theta\cos[2\alpha + 2t\omega] - 2M\theta \right. \\
& \quad \cos[\alpha - t\omega]^2\sec[\alpha]^2 - 2M\theta\cos[2\alpha]\cos[\alpha - t\omega]^2\sec[\alpha]^2 - 2M\theta\sec[\alpha]^2 \\
& \quad \sin[t\omega]^2 - 2M\theta\cos[2\alpha]\sec[\alpha]^2\sin[t\omega]^2 + 2\sqrt{2}\sqrt{-M\theta^2(-6 - 2\cos[2\alpha] + \\
& \quad 2\cos[2t\omega] - \cos[2\alpha - 2t\omega] - \cos[2\alpha + 2t\omega])\sin[\alpha]^2\sin[t\omega]^2}) \\
& \sqrt{\left(\frac{1}{1 + \cos[2\alpha]} \left(-2 + 4M\theta - 2\cos[2\alpha] - 2M\theta\cos[2t\omega] + M\theta\cos[2\alpha - 2t\omega] + \right. \right. \\
& \quad \left. \left. M\theta\cos[2\alpha + 2t\omega] + 2\sqrt{2}\sqrt{M\theta^2(6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \right. \right.} \\
& \quad \left. \left. \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega])\sin[\alpha]^2\sin[t\omega]^2) \right) \right) \Bigg) \Bigg) / \\
& (8\sqrt{M\theta^2(6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega])\sin[\alpha]^2\sin[t\omega]^2}) + \\
& \left. s \left(\left(\sqrt{\left(\frac{1}{1 + \cos[2\alpha]} \left(-2 + 4M\theta - 2\cos[2\alpha] - 2M\theta\cos[2t\omega] + M\theta\cos[2\alpha - 2t\omega] + \right. \right. \right. \right. \right. \right. \\
& \quad \left. \left. \left. M\theta\cos[2\alpha + 2t\omega] - 2\sqrt{2}\sqrt{M\theta^2(6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \right. \right. \right.} \\
& \quad \left. \left. \left. \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega])\sin[\alpha]^2\sin[t\omega]^2) \right) \right) \right) \Bigg) \Bigg) \right. \\
& \quad \left(4M\theta - 2M\theta\cos[2t\omega] + M\theta\cos[2\alpha - 2t\omega] + M\theta\cos[2\alpha + 2t\omega] - 2M\theta \right. \\
& \quad \cos[\alpha - t\omega]^2\sec[\alpha]^2 - 2M\theta\cos[2\alpha]\cos[\alpha - t\omega]^2\sec[\alpha]^2 - 2M\theta\sec[\alpha]^2 \\
& \quad \sin[t\omega]^2 - 2M\theta\cos[2\alpha]\sec[\alpha]^2\sin[t\omega]^2 + 2\sqrt{2}\sqrt{M\theta^2(6 + 2\cos[2\alpha] - \\
& \quad 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega])\sin[\alpha]^2\sin[t\omega]^2}) \Bigg) \Bigg) / \\
& (8\sqrt{M\theta^2(6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega])\sin[\alpha]^2\sin[t\omega]^2}) + \\
& \left(\sqrt{\left(\frac{1}{1 + \cos[2\alpha]} \left(-2 + 4M\theta - 2\cos[2\alpha] - 2M\theta\cos[2t\omega] + M\theta\cos[2\alpha - 2t\omega] + \right. \right. \right. \\
& \quad \left. \left. \left. M\theta\cos[2\alpha + 2t\omega] + 2\sqrt{2}\sqrt{M\theta^2(6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \right. \right. \right.} \\
& \quad \left. \left. \left. \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega])\sin[\alpha]^2\sin[t\omega]^2) \right) \right) \right) \Bigg) \Bigg) \\
& \quad (-4M\theta + 2M\theta\cos[2t\omega] - M\theta\cos[2\alpha - 2t\omega] - M\theta\cos[2\alpha + 2t\omega] + 2M\theta \\
& \quad \cos[\alpha - t\omega]^2\sec[\alpha]^2 + 2M\theta\cos[2\alpha]\cos[\alpha - t\omega]^2\sec[\alpha]^2 + 2M\theta\sec[\alpha]^2 \\
& \quad \sin[t\omega]^2 + 2M\theta\cos[2\alpha]\sec[\alpha]^2\sin[t\omega]^2 + 2\sqrt{2}\sqrt{M\theta^2(6 + 2\cos[2\alpha] - \\
& \quad 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega])\sin[\alpha]^2\sin[t\omega]^2}) \Bigg) \Bigg) / \\
& (8\sqrt{M\theta^2(6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega])\sin[\alpha]^2\sin[t\omega]^2}) +
\end{aligned}$$

$$\begin{aligned}
& \sin[\alpha]^2 \sin[t \omega]^2) \Big) - \\
& e^{-i \theta} r \left(\left(i \cos[\alpha] \cot[\alpha] \csc[t \omega]^2 \left(-4 M0 + 2 M0 \cos[2 t \omega] - M0 \cos[2 \alpha - 2 t \omega] - \right. \right. \right. \\
& \quad M0 \cos[2 \alpha + 2 t \omega] + 2 M0 \cos[\alpha - t \omega]^2 \sec[\alpha]^2 + 2 M0 \cos[2 \alpha] \\
& \quad \cos[\alpha - t \omega]^2 \sec[\alpha]^2 + 2 M0 \sec[\alpha]^2 \sin[t \omega]^2 + 2 M0 \cos[2 \alpha] \\
& \quad \sec[\alpha]^2 \sin[t \omega]^2 + 2 \sqrt{2} \sqrt{-M0^2 (-6 - 2 \cos[2 \alpha] + 2 \cos[2 t \omega] - \\
& \quad \cos[2 \alpha - 2 t \omega] - \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega]^2} \Big) \\
& \quad \sqrt{\left(\frac{1}{1 + \cos[2 \alpha]} \left(-2 + 4 M0 - 2 \cos[2 \alpha] - 2 M0 \cos[2 t \omega] + M0 \cos[2 \alpha - 2 t \omega] + \right. \right.} \\
& \quad \quad M0 \cos[2 \alpha + 2 t \omega] - 2 \sqrt{2} \sqrt{M0^2 (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \\
& \quad \quad \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega]^2} \Big) \Big) \\
& \quad \left(4 M0 - 2 M0 \cos[2 t \omega] + M0 \cos[2 \alpha - 2 t \omega] + M0 \cos[2 \alpha + 2 t \omega] - 2 M0 \right. \\
& \quad \cos[\alpha - t \omega]^2 \sec[\alpha]^2 - 2 M0 \cos[2 \alpha] \cos[\alpha - t \omega]^2 \sec[\alpha]^2 - 2 M0 \sec[\alpha]^2 \\
& \quad \sin[t \omega]^2 - 2 M0 \cos[2 \alpha] \sec[\alpha]^2 \sin[t \omega]^2 + 2 \sqrt{2} \sqrt{M0^2 (6 + 2 \cos[2 \alpha] - \\
& \quad 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega]^2} \Big) \Big) / \\
& \quad \left(32 M0 (1 + \cos[2 \alpha]) \sqrt{M0^2 (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \right.} \\
& \quad \quad \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega]^2} \Big) - \\
& \quad \left(i \cos[\alpha] \cot[\alpha] \csc[t \omega]^2 \left(4 M0 - 2 M0 \cos[2 t \omega] + M0 \cos[2 \alpha - 2 t \omega] + M0 \right. \right. \\
& \quad \cos[2 \alpha + 2 t \omega] - 2 M0 \cos[\alpha - t \omega]^2 \sec[\alpha]^2 - 2 M0 \cos[2 \alpha] \\
& \quad \cos[\alpha - t \omega]^2 \sec[\alpha]^2 - 2 M0 \sec[\alpha]^2 \sin[t \omega]^2 - 2 M0 \cos[2 \alpha] \\
& \quad \sec[\alpha]^2 \sin[t \omega]^2 + 2 \sqrt{2} \sqrt{-M0^2 (-6 - 2 \cos[2 \alpha] + 2 \cos[2 t \omega] - \\
& \quad \cos[2 \alpha - 2 t \omega] - \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega]^2} \Big) \\
& \quad \sqrt{\left(\frac{1}{1 + \cos[2 \alpha]} \left(-2 + 4 M0 - 2 \cos[2 \alpha] - 2 M0 \cos[2 t \omega] + M0 \cos[2 \alpha - 2 t \omega] + \right. \right.} \\
& \quad \quad M0 \cos[2 \alpha + 2 t \omega] + 2 \sqrt{2} \sqrt{M0^2 (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \\
& \quad \quad \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega]^2} \Big) \Big) \\
& \quad \left(-4 M0 + 2 M0 \cos[2 t \omega] - M0 \cos[2 \alpha - 2 t \omega] - M0 \cos[2 \alpha + 2 t \omega] + 2 M0 \right. \\
& \quad \cos[\alpha - t \omega]^2 \sec[\alpha]^2 + 2 M0 \cos[2 \alpha] \cos[\alpha - t \omega]^2 \sec[\alpha]^2 + 2 M0 \sec[\alpha]^2 \\
& \quad \sin[t \omega]^2 + 2 M0 \cos[2 \alpha] \sec[\alpha]^2 \sin[t \omega]^2 + 2 \sqrt{2} \sqrt{M0^2 (6 + 2 \cos[2 \alpha] - \\
& \quad 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega]^2} \Big) \Big) / \\
& \quad \left(32 M0 (1 + \cos[2 \alpha]) \sqrt{M0^2 (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \right.} \\
& \quad \quad \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega]^2} \Big) \Big) + \\
& \quad e^{i \theta} r \left(\left(i \cos[\alpha] \cot[\alpha] \csc[t \omega]^2 \left(-4 M0 + 2 M0 \cos[2 t \omega] - M0 \cos[2 \alpha - 2 t \omega] - \right. \right. \right. \\
& \quad M0 \cos[2 \alpha + 2 t \omega] + 2 M0 \cos[\alpha - t \omega]^2 \sec[\alpha]^2 + 2 M0 \cos[2 \alpha] \\
& \quad \cos[\alpha - t \omega]^2 \sec[\alpha]^2 + 2 M0 \sec[\alpha]^2 \sin[t \omega]^2 + 2 M0 \cos[2 \alpha] \\
& \quad \sec[\alpha]^2 \sin[t \omega]^2 + 2 \sqrt{2} \sqrt{-M0^2 (-6 - 2 \cos[2 \alpha] + 2 \cos[2 t \omega] - \\
& \quad \cos[2 \alpha - 2 t \omega] - \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega]^2} \Big)
\end{aligned}$$

$$\begin{aligned}
& \cos[2\alpha - 2t\omega] - \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2) \Big) \\
& \sqrt{\left(\frac{1}{1 + \cos[2\alpha]} \left(-2 + 4M_0 - 2\cos[2\alpha] - 2M_0 \cos[2t\omega] + M_0 \cos[2\alpha - 2t\omega] + \right. \right. \\
& \quad \left. \left. M_0 \cos[2\alpha + 2t\omega] - 2\sqrt{2} \sqrt{M_0^2 (6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \right. \right. \\
& \quad \left. \left. \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2) \right) \right)} \\
& \left(4M_0 - 2M_0 \cos[2t\omega] + M_0 \cos[2\alpha - 2t\omega] + M_0 \cos[2\alpha + 2t\omega] - 2M_0 \right. \\
& \quad \cos[\alpha - t\omega]^2 \sec[\alpha]^2 - 2M_0 \cos[2\alpha] \cos[\alpha - t\omega]^2 \sec[\alpha]^2 - 2M_0 \sec[\alpha]^2 \\
& \quad \sin[t\omega]^2 - 2M_0 \cos[2\alpha] \sec[\alpha]^2 \sin[t\omega]^2 + 2\sqrt{2} \sqrt{M_0^2 (6 + 2\cos[2\alpha] - \\
& \quad \left. 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2) \right) \Big) \Big) / \\
& \left(32M_0 (1 + \cos[2\alpha]) \sqrt{M_0^2 (6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \right. \\
& \quad \left. \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2) \right) - \\
& \left(i \cos[\alpha] \cot[\alpha] \csc[t\omega]^2 \left(4M_0 - 2M_0 \cos[2t\omega] + M_0 \cos[2\alpha - 2t\omega] + M_0 \right. \right. \\
& \quad \cos[2\alpha + 2t\omega] - 2M_0 \cos[\alpha - t\omega]^2 \sec[\alpha]^2 - 2M_0 \cos[2\alpha] \\
& \quad \cos[\alpha - t\omega]^2 \sec[\alpha]^2 - 2M_0 \sec[\alpha]^2 \sin[t\omega]^2 - 2M_0 \cos[2\alpha] \\
& \quad \sec[\alpha]^2 \sin[t\omega]^2 + 2\sqrt{2} \sqrt{-M_0^2 (-6 - 2\cos[2\alpha] + 2\cos[2t\omega] - \\
& \quad \left. \cos[2\alpha - 2t\omega] - \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2) \right) \Big) \\
& \sqrt{\left(\frac{1}{1 + \cos[2\alpha]} \left(-2 + 4M_0 - 2\cos[2\alpha] - 2M_0 \cos[2t\omega] + M_0 \cos[2\alpha - 2t\omega] + \right. \right. \\
& \quad \left. \left. M_0 \cos[2\alpha + 2t\omega] + 2\sqrt{2} \sqrt{M_0^2 (6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \right. \right. \\
& \quad \left. \left. \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2) \right) \right)} \\
& \left(-4M_0 + 2M_0 \cos[2t\omega] - M_0 \cos[2\alpha - 2t\omega] - M_0 \cos[2\alpha + 2t\omega] + 2M_0 \right. \\
& \quad \cos[\alpha - t\omega]^2 \sec[\alpha]^2 + 2M_0 \cos[2\alpha] \cos[\alpha - t\omega]^2 \sec[\alpha]^2 + 2M_0 \sec[\alpha]^2 \\
& \quad \sin[t\omega]^2 + 2M_0 \cos[2\alpha] \sec[\alpha]^2 \sin[t\omega]^2 + 2\sqrt{2} \sqrt{M_0^2 (6 + 2\cos[2\alpha] - \\
& \quad \left. 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2) \right) \Big) \Big) / \\
& \left(32M_0 (1 + \cos[2\alpha]) \sqrt{M_0^2 (6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \right. \\
& \quad \left. \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2) \right) - \\
& i \left(- \left(\left(i \omega \cos[\alpha] \cot[\alpha] \cot[t\omega] \csc[t\omega]^2 \left(-4M_0 + 2M_0 \cos[2t\omega] - \right. \right. \right. \right. \\
& \quad M_0 \cos[2\alpha - 2t\omega] - M_0 \cos[2\alpha + 2t\omega] + 2M_0 \cos[\alpha - t\omega]^2 \sec[\alpha]^2 + \\
& \quad 2M_0 \cos[2\alpha] \cos[\alpha - t\omega]^2 \sec[\alpha]^2 + 2M_0 \sec[\alpha]^2 \sin[t\omega]^2 + \\
& \quad 2M_0 \cos[2\alpha] \sec[\alpha]^2 \sin[t\omega]^2 + 2\sqrt{2} \sqrt{-M_0^2 (-6 - 2\cos[2\alpha] + \\
& \quad \left. 2\cos[2t\omega] - \cos[2\alpha - 2t\omega] - \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2) \right) \right) \\
& \sqrt{\left(\frac{1}{1 + \cos[2\alpha]} \left(-2 + 4M_0 - 2\cos[2\alpha] - 2M_0 \cos[2t\omega] + M_0 \cos[2\alpha - 2t\omega] + \right. \right. \\
& \quad \left. \left. M_0 \cos[2\alpha + 2t\omega] - 2\sqrt{2} \sqrt{M_0^2 (6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \right. \right. \\
& \quad \left. \left. \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2) \right) \right)}
\end{aligned}$$

$$\begin{aligned}
& \left(4 M_0 - 2 M_0 \cos[2 t \omega] + M_0 \cos[2 \alpha - 2 t \omega] + M_0 \cos[2 \alpha + 2 t \omega] - \right. \\
& \quad 2 M_0 \cos[\alpha - t \omega]^2 \sec[\alpha]^2 - 2 M_0 \cos[2 \alpha] \cos[\alpha - t \omega]^2 \sec[\alpha]^2 - 2 M_0 \sec[\alpha]^2 \\
& \quad \sin[t \omega]^2 - 2 M_0 \cos[2 \alpha] \sec[\alpha]^2 \sin[t \omega]^2 + 2 \sqrt{2} \sqrt{M_0^2 (6 + 2 \cos[2 \alpha] - \\
& \quad 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega]^2} \left. \right) / \\
& \left(16 M_0 (1 + \cos[2 \alpha]) \sqrt{M_0^2 (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega]^2} \right) + \\
& \left(i \omega \cos[\alpha] \cot[\alpha] \cot[t \omega] \csc[t \omega]^2 \left(4 M_0 - 2 M_0 \cos[2 t \omega] + M_0 \cos[2 \alpha - 2 t \omega] + M_0 \cos[2 \alpha + 2 t \omega] - 2 M_0 \cos[\alpha - t \omega]^2 \sec[\alpha]^2 - 2 M_0 \cos[2 \alpha] \cos[\alpha - t \omega]^2 \sec[\alpha]^2 - 2 M_0 \sec[\alpha]^2 \sin[t \omega]^2 - 2 M_0 \cos[2 \alpha] \sec[\alpha]^2 \sin[t \omega]^2 + 2 \sqrt{2} \sqrt{-M_0^2 (-6 - 2 \cos[2 \alpha] + 2 \cos[2 t \omega] - \cos[2 \alpha - 2 t \omega] - \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega]^2} \right) \right) \\
& \sqrt{\left(\frac{1}{1 + \cos[2 \alpha]} \left(-2 + 4 M_0 - 2 \cos[2 \alpha] - 2 M_0 \cos[2 t \omega] + M_0 \cos[2 \alpha - 2 t \omega] + M_0 \cos[2 \alpha + 2 t \omega] + 2 \sqrt{2} \sqrt{M_0^2 (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega]^2} \right) \right)} \\
& \left(-4 M_0 + 2 M_0 \cos[2 t \omega] - M_0 \cos[2 \alpha - 2 t \omega] - M_0 \cos[2 \alpha + 2 t \omega] + 2 M_0 \cos[\alpha - t \omega]^2 \sec[\alpha]^2 + 2 M_0 \cos[2 \alpha] \cos[\alpha - t \omega]^2 \sec[\alpha]^2 + 2 M_0 \sec[\alpha]^2 \sin[t \omega]^2 + 2 M_0 \cos[2 \alpha] \sec[\alpha]^2 \sin[t \omega]^2 + 2 \sqrt{2} \sqrt{M_0^2 (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega]^2} \right) / \\
& \left(16 M_0 (1 + \cos[2 \alpha]) \sqrt{M_0^2 (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega]^2} \right) - \\
& \left(i \cos[\alpha] \cot[\alpha] \csc[t \omega]^2 \left(-4 M_0 + 2 M_0 \cos[2 t \omega] - M_0 \cos[2 \alpha - 2 t \omega] - M_0 \cos[2 \alpha + 2 t \omega] + 2 M_0 \cos[\alpha - t \omega]^2 \sec[\alpha]^2 + 2 M_0 \cos[2 \alpha] \cos[\alpha - t \omega]^2 \sec[\alpha]^2 + 2 M_0 \sec[\alpha]^2 \sin[t \omega]^2 + 2 M_0 \cos[2 \alpha] \sec[\alpha]^2 \sin[t \omega]^2 + 2 \sqrt{2} \sqrt{-M_0^2 (-6 - 2 \cos[2 \alpha] + 2 \cos[2 t \omega] - \cos[2 \alpha - 2 t \omega] - \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega]^2} \right) \right) \\
& \sqrt{\left(\frac{1}{1 + \cos[2 \alpha]} \left(-2 + 4 M_0 - 2 \cos[2 \alpha] - 2 M_0 \cos[2 t \omega] + M_0 \cos[2 \alpha - 2 t \omega] + M_0 \cos[2 \alpha + 2 t \omega] - 2 \sqrt{2} \sqrt{M_0^2 (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega]^2} \right) \right)} \\
& \left(4 M_0 - 2 M_0 \cos[2 t \omega] + M_0 \cos[2 \alpha - 2 t \omega] + M_0 \cos[2 \alpha + 2 t \omega] - 2 M_0 \cos[\alpha - t \omega]^2 \sec[\alpha]^2 - 2 M_0 \cos[2 \alpha] \cos[\alpha - t \omega]^2 \sec[\alpha]^2 - 2 M_0 \sec[\alpha]^2 \sin[t \omega]^2 - 2 M_0 \cos[2 \alpha] \sec[\alpha]^2 \sin[t \omega]^2 + 2 \sqrt{2} \sqrt{M_0^2 (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega]^2} \right) \\
& \left(2 M_0^2 \omega \cos[t \omega] (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega] + M_0^2 \sin[\alpha]^2 \sin[t \omega]^2 \right)
\end{aligned}$$

$$\begin{aligned}
& \left(4 \omega \sin[2 t \omega] + 2 \omega \sin[2 \alpha - 2 t \omega] - 2 \omega \sin[2 \alpha + 2 t \omega] \right) \Bigg) / \\
& \left(64 M^0 (1 + \cos[2 \alpha]) \left(M^0 (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \right. \right. \\
& \quad \left. \left. \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega]^2 \right)^{3/2} \right) + \\
& \left(i \cos[\alpha] \cot[\alpha] \csc[t \omega]^2 \left(4 M^0 - 2 M^0 \cos[2 t \omega] + M^0 \cos[2 \alpha - 2 t \omega] + M^0 \right. \right. \\
& \quad \cos[2 \alpha + 2 t \omega] - 2 M^0 \cos[\alpha - t \omega]^2 \sec[\alpha]^2 - 2 M^0 \cos[2 \alpha] \\
& \quad \cos[\alpha - t \omega]^2 \sec[\alpha]^2 - 2 M^0 \sec[\alpha]^2 \sin[t \omega]^2 - 2 M^0 \cos[2 \alpha] \\
& \quad \sec[\alpha]^2 \sin[t \omega]^2 + 2 \sqrt{2} \sqrt{-M^0 (-6 - 2 \cos[2 \alpha] + 2 \cos[2 t \omega] - \\
& \quad \cos[2 \alpha - 2 t \omega] - \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega]^2} \Bigg) \\
& \sqrt{\left(\frac{1}{1 + \cos[2 \alpha]} \left(-2 + 4 M^0 - 2 \cos[2 \alpha] - 2 M^0 \cos[2 t \omega] + M^0 \cos[2 \alpha - 2 t \omega] + \right. \right. \\
& \quad \left. \left. M^0 \cos[2 \alpha + 2 t \omega] + 2 \sqrt{2} \sqrt{M^0 (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \right. \right. \\
& \quad \left. \left. \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega]^2} \right) \right) \\
& \left(-4 M^0 + 2 M^0 \cos[2 t \omega] - M^0 \cos[2 \alpha - 2 t \omega] - M^0 \cos[2 \alpha + 2 t \omega] + 2 M^0 \right. \\
& \quad \cos[\alpha - t \omega]^2 \sec[\alpha]^2 + 2 M^0 \cos[2 \alpha] \cos[\alpha - t \omega]^2 \sec[\alpha]^2 + 2 M^0 \sec[\alpha]^2 \\
& \quad \sin[t \omega]^2 + 2 M^0 \cos[2 \alpha] \sec[\alpha]^2 \sin[t \omega]^2 + 2 \sqrt{2} \sqrt{M^0 (6 + 2 \cos[2 \alpha] - \\
& \quad 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega]^2} \Bigg) \\
& \left(2 M^0 \omega \cos[t \omega] (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \right. \\
& \quad \left. \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega] + M^0 \sin[\alpha]^2 \sin[t \omega]^2 \right. \\
& \quad \left. (4 \omega \sin[2 t \omega] + 2 \omega \sin[2 \alpha - 2 t \omega] - 2 \omega \sin[2 \alpha + 2 t \omega]) \right) \Bigg) / \\
& \left(64 M^0 (1 + \cos[2 \alpha]) \left(M^0 (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \right. \right. \\
& \quad \left. \left. \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega]^2 \right)^{3/2} \right) + \\
& \left(i \cos[\alpha] \cot[\alpha] \csc[t \omega]^2 \left(-4 M^0 + 2 M^0 \cos[2 t \omega] - M^0 \cos[2 \alpha - 2 t \omega] - \right. \right. \\
& \quad M^0 \cos[2 \alpha + 2 t \omega] + 2 M^0 \cos[\alpha - t \omega]^2 \sec[\alpha]^2 + 2 M^0 \cos[2 \alpha] \\
& \quad \cos[\alpha - t \omega]^2 \sec[\alpha]^2 + 2 M^0 \sec[\alpha]^2 \sin[t \omega]^2 + 2 M^0 \cos[2 \alpha] \\
& \quad \sec[\alpha]^2 \sin[t \omega]^2 + 2 \sqrt{2} \sqrt{-M^0 (-6 - 2 \cos[2 \alpha] + 2 \cos[2 t \omega] - \\
& \quad \cos[2 \alpha - 2 t \omega] - \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega]^2} \Bigg) \\
& \left(4 M^0 - 2 M^0 \cos[2 t \omega] + M^0 \cos[2 \alpha - 2 t \omega] + M^0 \cos[2 \alpha + 2 t \omega] - 2 M^0 \right. \\
& \quad \cos[\alpha - t \omega]^2 \sec[\alpha]^2 - 2 M^0 \cos[2 \alpha] \cos[\alpha - t \omega]^2 \sec[\alpha]^2 - 2 M^0 \sec[\alpha]^2 \\
& \quad \sin[t \omega]^2 - 2 M^0 \cos[2 \alpha] \sec[\alpha]^2 \sin[t \omega]^2 + 2 \sqrt{2} \sqrt{M^0 (6 + 2 \cos[2 \alpha] - \\
& \quad 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega]^2} \Bigg) \\
& \left(4 M^0 \omega \sin[2 t \omega] + 2 M^0 \omega \sin[2 \alpha - 2 t \omega] - 2 M^0 \omega \sin[2 \alpha + 2 t \omega] - \right. \\
& \quad \left(\sqrt{2} (2 M^0 \omega \cos[t \omega] (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \right. \\
& \quad \left. \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega] + M^0 \sin[\alpha]^2 \sin[t \omega]^2 \right. \\
& \quad \left. (4 \omega \sin[2 t \omega] + 2 \omega \sin[2 \alpha - 2 t \omega] - 2 \omega \sin[2 \alpha + 2 t \omega]) \right) \Bigg) / \\
& \left(\sqrt{M^0 (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega]^2} \right) \Bigg) /
\end{aligned}$$

$$\begin{aligned}
& \left(64 M_0 (1 + \cos[2\alpha])^2 \sqrt{M_0^2 (6 + 2 \cos[2\alpha] - 2 \cos[2t\omega] + \cos[2\alpha - 2t\omega] + \right. \\
& \quad \left. \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2} \right. \\
& \quad \sqrt{\left(\frac{1}{1 + \cos[2\alpha]} (-2 + 4 M_0 - 2 \cos[2\alpha] - 2 M_0 \cos[2t\omega] + M_0 \cos[2\alpha - 2t\omega] + \right. \\
& \quad \left. M_0 \cos[2\alpha + 2t\omega] - 2 \sqrt{2} \sqrt{M_0^2 (6 + 2 \cos[2\alpha] - 2 \cos[2t\omega] + \right. \\
& \quad \left. \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2} \right) \Bigg) - \\
& \left(i \cos[\alpha] \cot[\alpha] \csc[t\omega]^2 \left(4 M_0 - 2 M_0 \cos[2t\omega] + M_0 \cos[2\alpha - 2t\omega] + M_0 \right. \right. \\
& \quad \left. \cos[2\alpha + 2t\omega] - 2 M_0 \cos[\alpha - t\omega]^2 \sec[\alpha]^2 - 2 M_0 \cos[2\alpha] \right. \\
& \quad \left. \cos[\alpha - t\omega]^2 \sec[\alpha]^2 - 2 M_0 \sec[\alpha]^2 \sin[t\omega]^2 - 2 M_0 \cos[2\alpha] \right. \\
& \quad \left. \sec[\alpha]^2 \sin[t\omega]^2 + 2 \sqrt{2} \sqrt{-M_0^2 (-6 - 2 \cos[2\alpha] + 2 \cos[2t\omega] - \right. \\
& \quad \left. \cos[2\alpha - 2t\omega] - \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2} \right) \\
& \quad \left(-4 M_0 + 2 M_0 \cos[2t\omega] - M_0 \cos[2\alpha - 2t\omega] - M_0 \cos[2\alpha + 2t\omega] + 2 M_0 \right. \\
& \quad \left. \cos[\alpha - t\omega]^2 \sec[\alpha]^2 + 2 M_0 \cos[2\alpha] \cos[\alpha - t\omega]^2 \sec[\alpha]^2 + 2 M_0 \sec[\alpha]^2 \right. \\
& \quad \left. \sin[t\omega]^2 + 2 M_0 \cos[2\alpha] \sec[\alpha]^2 \sin[t\omega]^2 + 2 \sqrt{2} \sqrt{M_0^2 (6 + 2 \cos[2\alpha] - \right. \\
& \quad \left. 2 \cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2} \right) \\
& \quad \left(4 M_0 \omega \sin[2t\omega] + 2 M_0 \omega \sin[2\alpha - 2t\omega] - 2 M_0 \omega \sin[2\alpha + 2t\omega] + \right. \\
& \quad \left(\sqrt{2} (2 M_0^2 \omega \cos[t\omega] (6 + 2 \cos[2\alpha] - 2 \cos[2t\omega] + \cos[2\alpha - 2t\omega] + \right. \\
& \quad \left. \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega] + M_0^2 \sin[\alpha]^2 \sin[t\omega]^2 \right. \\
& \quad \left. (4 \omega \sin[2t\omega] + 2 \omega \sin[2\alpha - 2t\omega] - 2 \omega \sin[2\alpha + 2t\omega]) \right) \Bigg) / \\
& \quad \left(\sqrt{M_0^2 (6 + 2 \cos[2\alpha] - 2 \cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2} \right) \Bigg) / \\
& \left(64 M_0 (1 + \cos[2\alpha])^2 \sqrt{M_0^2 (6 + 2 \cos[2\alpha] - 2 \cos[2t\omega] + \cos[2\alpha - 2t\omega] + \right. \\
& \quad \left. \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2} \right. \\
& \quad \sqrt{\left(\frac{1}{1 + \cos[2\alpha]} (-2 + 4 M_0 - 2 \cos[2\alpha] - 2 M_0 \cos[2t\omega] + M_0 \cos[2\alpha - 2t\omega] + \right. \\
& \quad \left. M_0 \cos[2\alpha + 2t\omega] + 2 \sqrt{2} \sqrt{M_0^2 (6 + 2 \cos[2\alpha] - 2 \cos[2t\omega] + \right. \\
& \quad \left. \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2} \right) \Bigg) + \\
& \left(i \cos[\alpha] \cot[\alpha] \csc[t\omega]^2 \left(-4 M_0 + 2 M_0 \cos[2t\omega] - M_0 \cos[2\alpha - 2t\omega] - \right. \right. \\
& \quad \left. M_0 \cos[2\alpha + 2t\omega] + 2 M_0 \cos[\alpha - t\omega]^2 \sec[\alpha]^2 + 2 M_0 \cos[2\alpha] \right. \\
& \quad \left. \cos[\alpha - t\omega]^2 \sec[\alpha]^2 + 2 M_0 \sec[\alpha]^2 \sin[t\omega]^2 + 2 M_0 \cos[2\alpha] \right. \\
& \quad \left. \sec[\alpha]^2 \sin[t\omega]^2 + 2 \sqrt{2} \sqrt{-M_0^2 (-6 - 2 \cos[2\alpha] + 2 \cos[2t\omega] - \right. \\
& \quad \left. \cos[2\alpha - 2t\omega] - \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2} \right) \\
& \quad \sqrt{\left(\frac{1}{1 + \cos[2\alpha]} (-2 + 4 M_0 - 2 \cos[2\alpha] - 2 M_0 \cos[2t\omega] + M_0 \cos[2\alpha - 2t\omega] + \right. \\
& \quad \left. M_0 \cos[2\alpha + 2t\omega] - 2 \sqrt{2} \sqrt{M_0^2 (6 + 2 \cos[2\alpha] - 2 \cos[2t\omega] + \right. \\
& \quad \left. \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2} \right) \Bigg)
\end{aligned}$$

$$\begin{aligned}
& \left(-4 M0 \omega \cos[t \omega] \sec[\alpha]^2 \sin[t \omega] - 4 M0 \omega \cos[2 \alpha] \cos[t \omega] \sec[\alpha]^2 \right. \\
& \quad \sin[t \omega] + 4 M0 \omega \sin[2 t \omega] + 2 M0 \omega \sin[2 \alpha - 2 t \omega] - 4 M0 \omega \cos[\alpha - t \omega] \\
& \quad \sec[\alpha]^2 \sin[\alpha - t \omega] - 4 M0 \omega \cos[2 \alpha] \cos[\alpha - t \omega] \sec[\alpha]^2 \sin[\alpha - t \omega] - 2 \\
& \quad M0 \omega \sin[2 \alpha + 2 t \omega] + \left(\sqrt{2} \left(2 M0^2 \omega \cos[t \omega] \left(6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \right. \right. \right. \\
& \quad \left. \left. \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega] \right) \sin[\alpha]^2 \sin[t \omega] + M0^2 \sin[\alpha]^2 \right. \\
& \quad \left. \sin[t \omega]^2 \left(4 \omega \sin[2 t \omega] + 2 \omega \sin[2 \alpha - 2 t \omega] - 2 \omega \sin[2 \alpha + 2 t \omega] \right) \right) \Big) / \\
& \quad \left(\sqrt{M0^2 \left(6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega] \right) \sin[\alpha]^2 \sin[t \omega]^2} \right) \Big) / \\
& \quad \left(32 M0 \left(1 + \cos[2 \alpha] \right) \sqrt{M0^2 \left(6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \right. \right. \\
& \quad \left. \left. \cos[2 \alpha + 2 t \omega] \right) \sin[\alpha]^2 \sin[t \omega]^2} \right) - \\
& \quad \left(i \cos[\alpha] \cot[\alpha] \csc[t \omega]^2 \left(4 M0 - 2 M0 \cos[2 t \omega] + M0 \cos[2 \alpha - 2 t \omega] + M0 \right. \right. \\
& \quad \left. \left. \cos[2 \alpha + 2 t \omega] - 2 M0 \cos[\alpha - t \omega]^2 \sec[\alpha]^2 - 2 M0 \cos[2 \alpha] \right. \right. \\
& \quad \left. \left. \cos[\alpha - t \omega]^2 \sec[\alpha]^2 - 2 M0 \sec[\alpha]^2 \sin[t \omega]^2 - 2 M0 \cos[2 \alpha] \right. \right. \\
& \quad \left. \left. \sec[\alpha]^2 \sin[t \omega]^2 + 2 \sqrt{2} \sqrt{-M0^2 \left(-6 - 2 \cos[2 \alpha] + 2 \cos[2 t \omega] - \right. \right. \right. \\
& \quad \left. \left. \cos[2 \alpha - 2 t \omega] - \cos[2 \alpha + 2 t \omega] \right) \sin[\alpha]^2 \sin[t \omega]^2} \right) \Big) \\
& \quad \sqrt{\left(\frac{1}{1 + \cos[2 \alpha]} \left(-2 + 4 M0 - 2 \cos[2 \alpha] - 2 M0 \cos[2 t \omega] + M0 \cos[2 \alpha - 2 t \omega] + \right. \right. \\
& \quad \left. \left. M0 \cos[2 \alpha + 2 t \omega] + 2 \sqrt{2} \sqrt{M0^2 \left(6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \right. \right. \right. \\
& \quad \left. \left. \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega] \right) \sin[\alpha]^2 \sin[t \omega]^2} \right) \Big) \Big) \\
& \quad \left(4 M0 \omega \cos[t \omega] \sec[\alpha]^2 \sin[t \omega] + 4 M0 \omega \cos[2 \alpha] \cos[t \omega] \sec[\alpha]^2 \right. \\
& \quad \sin[t \omega] - 4 M0 \omega \sin[2 t \omega] - 2 M0 \omega \sin[2 \alpha - 2 t \omega] + 4 M0 \omega \cos[\alpha - t \omega] \\
& \quad \sec[\alpha]^2 \sin[\alpha - t \omega] + 4 M0 \omega \cos[2 \alpha] \cos[\alpha - t \omega] \sec[\alpha]^2 \sin[\alpha - t \omega] + 2 \\
& \quad M0 \omega \sin[2 \alpha + 2 t \omega] + \left(\sqrt{2} \left(2 M0^2 \omega \cos[t \omega] \left(6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \right. \right. \right. \\
& \quad \left. \left. \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega] \right) \sin[\alpha]^2 \sin[t \omega] + M0^2 \sin[\alpha]^2 \right. \\
& \quad \left. \sin[t \omega]^2 \left(4 \omega \sin[2 t \omega] + 2 \omega \sin[2 \alpha - 2 t \omega] - 2 \omega \sin[2 \alpha + 2 t \omega] \right) \right) \Big) / \\
& \quad \left(\sqrt{M0^2 \left(6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega] \right) \sin[\alpha]^2 \sin[t \omega]^2} \right) \Big) / \\
& \quad \left(32 M0 \left(1 + \cos[2 \alpha] \right) \sqrt{M0^2 \left(6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \right. \right. \\
& \quad \left. \left. \cos[2 \alpha + 2 t \omega] \right) \sin[\alpha]^2 \sin[t \omega]^2} \right) - \\
& \quad \left(i \cos[\alpha] \cot[\alpha] \csc[t \omega]^2 \sqrt{\left(\frac{1}{1 + \cos[2 \alpha]} \left(-2 + 4 M0 - 2 \cos[2 \alpha] - 2 M0 \cos[2 t \omega] + \right. \right. \right. \\
& \quad \left. \left. M0 \cos[2 \alpha - 2 t \omega] + M0 \cos[2 \alpha + 2 t \omega] + 2 \sqrt{2} \sqrt{M0^2 \left(6 + 2 \cos[2 \alpha] - \right. \right. \right. \\
& \quad \left. \left. 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega] \right) \sin[\alpha]^2 \sin[t \omega]^2} \right) \Big) \Big) \\
& \quad \left(-4 M0 + 2 M0 \cos[2 t \omega] - M0 \cos[2 \alpha - 2 t \omega] - M0 \cos[2 \alpha + 2 t \omega] + 2 M0 \right. \\
& \quad \left. \cos[\alpha - t \omega]^2 \sec[\alpha]^2 + 2 M0 \cos[2 \alpha] \cos[\alpha - t \omega]^2 \sec[\alpha]^2 + 2 M0 \sec[\alpha]^2 \right. \\
& \quad \left. \sin[t \omega]^2 + 2 M0 \cos[2 \alpha] \sec[\alpha]^2 \sin[t \omega]^2 + 2 \sqrt{2} \sqrt{M0^2 \left(6 + 2 \cos[2 \alpha] - \right. \right. \right. \\
& \quad \left. \left. 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega] \right) \sin[\alpha]^2 \sin[t \omega]^2} \right) \Big) \\
& \quad \left(-4 M0 \omega \cos[t \omega] \sec[\alpha]^2 \sin[t \omega] - 4 M0 \omega \cos[2 \alpha] \cos[t \omega] \sec[\alpha]^2 \right.
\end{aligned}$$

$$\begin{aligned}
& \sin[t \omega] + 4 M0 \omega \sin[2 t \omega] + 2 M0 \omega \sin[2 \alpha - 2 t \omega] - 4 M0 \omega \cos[\alpha - t \omega] \\
& \sec[\alpha]^2 \sin[\alpha - t \omega] - 4 M0 \omega \cos[2 \alpha] \cos[\alpha - t \omega] \sec[\alpha]^2 \sin[\alpha - t \omega] - 2 M0 \\
& \omega \sin[2 \alpha + 2 t \omega] + \left(\sqrt{2} \left(-2 M0^2 \omega \cos[t \omega] \left(-6 - 2 \cos[2 \alpha] + 2 \cos[2 t \omega] - \right. \right. \right. \\
& \quad \left. \left. \cos[2 \alpha - 2 t \omega] - \cos[2 \alpha + 2 t \omega] \right) \sin[\alpha]^2 \sin[t \omega] - M0^2 \sin[\alpha]^2 \right. \\
& \quad \left. \sin[t \omega]^2 \left(-4 \omega \sin[2 t \omega] - 2 \omega \sin[2 \alpha - 2 t \omega] + 2 \omega \sin[2 \alpha + 2 t \omega] \right) \right) \right) / \\
& \left(\sqrt{\left(-M0^2 \left(-6 - 2 \cos[2 \alpha] + 2 \cos[2 t \omega] - \cos[2 \alpha - 2 t \omega] - \right. \right. \right. \\
& \quad \left. \left. \cos[2 \alpha + 2 t \omega] \right) \sin[\alpha]^2 \sin[t \omega]^2 \right) \right) \right) / \\
& \left(32 M0 \left(1 + \cos[2 \alpha] \right) \sqrt{\left(M0^2 \left(6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \right. \right. \right. \\
& \quad \left. \left. \cos[2 \alpha + 2 t \omega] \right) \sin[\alpha]^2 \sin[t \omega]^2 \right) \right) + \\
& \left(i \cos[\alpha] \cot[\alpha] \csc[t \omega]^2 \sqrt{\left(\frac{1}{1 + \cos[2 \alpha]} \left(-2 + 4 M0 - 2 \cos[2 \alpha] - 2 M0 \cos[2 t \omega] + \right. \right. \right. \\
& \quad \left. \left. M0 \cos[2 \alpha - 2 t \omega] + M0 \cos[2 \alpha + 2 t \omega] - 2 \sqrt{2} \sqrt{\left(M0^2 \left(6 + 2 \cos[2 \alpha] - \right. \right. \right. \right. \\
& \quad \left. \left. 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega] \right) \sin[\alpha]^2 \sin[t \omega]^2 \right) \right) \right) \right) \\
& \left(4 M0 - 2 M0 \cos[2 t \omega] + M0 \cos[2 \alpha - 2 t \omega] + M0 \cos[2 \alpha + 2 t \omega] - 2 M0 \right. \\
& \quad \cos[\alpha - t \omega]^2 \sec[\alpha]^2 - 2 M0 \cos[2 \alpha] \cos[\alpha - t \omega]^2 \sec[\alpha]^2 - 2 M0 \sec[\alpha]^2 \\
& \quad \sin[t \omega]^2 - 2 M0 \cos[2 \alpha] \sec[\alpha]^2 \sin[t \omega]^2 + 2 \sqrt{2} \sqrt{\left(M0^2 \left(6 + 2 \cos[2 \alpha] - \right. \right. \right. \\
& \quad \left. \left. 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega] \right) \sin[\alpha]^2 \sin[t \omega]^2 \right) \right) \\
& \left(4 M0 \omega \cos[t \omega] \sec[\alpha]^2 \sin[t \omega] + 4 M0 \omega \cos[2 \alpha] \cos[t \omega] \sec[\alpha]^2 \right. \\
& \quad \sin[t \omega] - 4 M0 \omega \sin[2 t \omega] - 2 M0 \omega \sin[2 \alpha - 2 t \omega] + 4 M0 \omega \cos[\alpha - t \omega] \\
& \quad \sec[\alpha]^2 \sin[\alpha - t \omega] + 4 M0 \omega \cos[2 \alpha] \cos[\alpha - t \omega] \sec[\alpha]^2 \sin[\alpha - t \omega] + 2 M0 \\
& \quad \omega \sin[2 \alpha + 2 t \omega] + \left(\sqrt{2} \left(-2 M0^2 \omega \cos[t \omega] \left(-6 - 2 \cos[2 \alpha] + 2 \cos[2 t \omega] - \right. \right. \right. \\
& \quad \left. \left. \cos[2 \alpha - 2 t \omega] - \cos[2 \alpha + 2 t \omega] \right) \sin[\alpha]^2 \sin[t \omega] - M0^2 \sin[\alpha]^2 \right. \\
& \quad \left. \sin[t \omega]^2 \left(-4 \omega \sin[2 t \omega] - 2 \omega \sin[2 \alpha - 2 t \omega] + 2 \omega \sin[2 \alpha + 2 t \omega] \right) \right) \right) / \\
& \left(\sqrt{\left(-M0^2 \left(-6 - 2 \cos[2 \alpha] + 2 \cos[2 t \omega] - \cos[2 \alpha - 2 t \omega] - \right. \right. \right. \\
& \quad \left. \left. \cos[2 \alpha + 2 t \omega] \right) \sin[\alpha]^2 \sin[t \omega]^2 \right) \right) \right) / \\
& \left(32 M0 \left(1 + \cos[2 \alpha] \right) \sqrt{\left(M0^2 \left(6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \right. \right. \right. \\
& \quad \left. \left. \cos[2 \alpha + 2 t \omega] \right) \sin[\alpha]^2 \sin[t \omega]^2 \right) \right) \right) + \\
& \frac{1}{M0} 2 i \sec[\alpha] \sin[t \omega]^2 \tan[\alpha] \left(-s \left(\left(i \cos[\alpha] \cot[\alpha] \csc[t \omega]^2 \left(-4 M0 + 2 M0 \right. \right. \right. \right. \right. \\
& \quad \cos[2 t \omega] - M0 \cos[2 \alpha - 2 t \omega] - M0 \cos[2 \alpha + 2 t \omega] + 2 M0 \cos[\alpha - t \omega]^2 \\
& \quad \sec[\alpha]^2 + 2 M0 \cos[2 \alpha] \cos[\alpha - t \omega]^2 \sec[\alpha]^2 + 2 M0 \sec[\alpha]^2 \sin[t \omega]^2 + 2 \\
& \quad M0 \cos[2 \alpha] \sec[\alpha]^2 \sin[t \omega]^2 + 2 \sqrt{2} \sqrt{\left(-M0^2 \left(-6 - 2 \cos[2 \alpha] + \right. \right. \right. \\
& \quad \left. \left. 2 \cos[2 t \omega] - \cos[2 \alpha - 2 t \omega] - \cos[2 \alpha + 2 t \omega] \right) \sin[\alpha]^2 \sin[t \omega]^2 \right) \right) \right) \\
& \sqrt{\left(\frac{1}{1 + \cos[2 \alpha]} \left(-2 + 4 M0 - 2 \cos[2 \alpha] - 2 M0 \cos[2 t \omega] + M0 \cos[2 \alpha - 2 t \omega] + \right. \right. \right. \\
& \quad \left. \left. M0 \cos[2 \alpha + 2 t \omega] - 2 \sqrt{2} \sqrt{\left(M0^2 \left(6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \right. \right. \right. \right. \\
& \quad \left. \left. \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega] \right) \sin[\alpha]^2 \sin[t \omega]^2 \right) \right) \right) \right) \\
& \left(4 M0 - 2 M0 \cos[2 t \omega] + M0 \cos[2 \alpha - 2 t \omega] + M0 \cos[2 \alpha + 2 t \omega] - 2 M0 \right.
\end{aligned}$$

$$\begin{aligned}
& \left(\frac{\cos[\alpha - t\omega]^2 \sec[\alpha]^2 - 2 M0 \cos[2\alpha] \cos[\alpha - t\omega]^2 \sec[\alpha]^2 - 2 M0 \sec[\alpha]^2 \sin[t\omega]^2 - 2 M0 \cos[2\alpha] \sec[\alpha]^2 \sin[t\omega]^2 + 2 \sqrt{2} \sqrt{M0^2 (6 + 2 \cos[2\alpha] - 2 \cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2}}{(32 M0 (1 + \cos[2\alpha]) \sqrt{M0^2 (6 + 2 \cos[2\alpha] - 2 \cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2}} - \right. \\
& \left. \left(i \cos[\alpha] \cot[\alpha] \csc[t\omega]^2 (4 M0 - 2 M0 \cos[2t\omega] + M0 \cos[2\alpha - 2t\omega] + M0 \cos[2\alpha + 2t\omega] - 2 M0 \cos[\alpha - t\omega]^2 \sec[\alpha]^2 - 2 M0 \cos[2\alpha] \cos[\alpha - t\omega]^2 \sec[\alpha]^2 \sin[t\omega]^2 - 2 M0 \sec[\alpha]^2 \sin[t\omega]^2 + 2 \sqrt{2} \sqrt{-M0^2 (-6 - 2 \cos[2\alpha] + 2 \cos[2t\omega] - \cos[2\alpha - 2t\omega] - \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2} \right) \right. \\
& \left. \sqrt{\left(\frac{1}{1 + \cos[2\alpha]} (-2 + 4 M0 - 2 \cos[2\alpha] - 2 M0 \cos[2t\omega] + M0 \cos[2\alpha - 2t\omega] + M0 \cos[2\alpha + 2t\omega] + 2 \sqrt{2} \sqrt{M0^2 (6 + 2 \cos[2\alpha] - 2 \cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2} \right)} \right. \\
& \left. (-4 M0 + 2 M0 \cos[2t\omega] - M0 \cos[2\alpha - 2t\omega] - M0 \cos[2\alpha + 2t\omega] + 2 M0 \cos[\alpha - t\omega]^2 \sec[\alpha]^2 + 2 M0 \cos[2\alpha] \cos[\alpha - t\omega]^2 \sec[\alpha]^2 + 2 M0 \sec[\alpha]^2 \sin[t\omega]^2 + 2 M0 \cos[2\alpha] \sec[\alpha]^2 \sin[t\omega]^2 + 2 \sqrt{2} \sqrt{M0^2 (6 + 2 \cos[2\alpha] - 2 \cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2} \right) \right. \\
& \left. (32 M0 (1 + \cos[2\alpha]) \sqrt{M0^2 (6 + 2 \cos[2\alpha] - 2 \cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2} \right) - \\
& i \left(- \left((-4 M0 + 2 M0 \cos[2t\omega] - M0 \cos[2\alpha - 2t\omega] - M0 \cos[2\alpha + 2t\omega] + 2 M0 \cos[\alpha - t\omega]^2 \sec[\alpha]^2 + 2 M0 \cos[2\alpha] \cos[\alpha - t\omega]^2 \sec[\alpha]^2 + 2 M0 \sec[\alpha]^2 \sin[t\omega]^2 + 2 M0 \cos[2\alpha] \sec[\alpha]^2 \sin[t\omega]^2 + 2 \sqrt{2} \sqrt{-M0^2 (-6 - 2 \cos[2\alpha] + 2 \cos[2t\omega] - \cos[2\alpha - 2t\omega] - \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2} \right) \right. \\
& \left. \sqrt{\left(\frac{1}{1 + \cos[2\alpha]} (-2 + 4 M0 - 2 \cos[2\alpha] - 2 M0 \cos[2t\omega] + M0 \cos[2\alpha - 2t\omega] + M0 \cos[2\alpha + 2t\omega] - 2 \sqrt{2} \sqrt{M0^2 (6 + 2 \cos[2\alpha] - 2 \cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2} \right)} \right. \\
& \left. (2 M0^2 \omega \cos[t\omega] (6 + 2 \cos[2\alpha] - 2 \cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega] + M0^2 \sin[\alpha]^2 \sin[t\omega]^2 (4 \omega \sin[2t\omega] + 2 \omega \sin[2\alpha - 2t\omega] - 2 \omega \sin[2\alpha + 2t\omega])) \right) \right. \\
& \left. (16 (M0^2 (6 + 2 \cos[2\alpha] - 2 \cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2)^{3/2}) \right) -
\end{aligned}$$

$$\begin{aligned}
& \left(\left(4 M0 - 2 M0 \cos[2 t \omega] + M0 \cos[2 \alpha - 2 t \omega] + M0 \cos[2 \alpha + 2 t \omega] - 2 M0 \right. \right. \\
& \quad \cos[\alpha - t \omega]^2 \sec[\alpha]^2 - 2 M0 \cos[2 \alpha] \cos[\alpha - t \omega]^2 \sec[\alpha]^2 - 2 M0 \sec[\alpha]^2 \\
& \quad \sin[t \omega]^2 - 2 M0 \cos[2 \alpha] \sec[\alpha]^2 \sin[t \omega]^2 + 2 \sqrt{2} \sqrt{-M0^2 (-6 - 2 \cos[2 \alpha] + \\
& \quad 2 \cos[2 t \omega] - \cos[2 \alpha - 2 t \omega] - \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega]^2} \Big) \\
& \quad \sqrt{\left(\frac{1}{1 + \cos[2 \alpha]} \left(-2 + 4 M0 - 2 \cos[2 \alpha] - 2 M0 \cos[2 t \omega] + M0 \cos[2 \alpha - 2 t \omega] + \right. \right. \\
& \quad \left. \left. M0 \cos[2 \alpha + 2 t \omega] + 2 \sqrt{2} \sqrt{M0^2 (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \right. \right.} \\
& \quad \left. \left. \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega]^2 \right) \right)} \\
& \quad \left(2 M0^2 \omega \cos[t \omega] (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \right. \\
& \quad \left. \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega] + M0^2 \sin[\alpha]^2 \sin[t \omega]^2 \right. \\
& \quad \left. (4 \omega \sin[2 t \omega] + 2 \omega \sin[2 \alpha - 2 t \omega] - 2 \omega \sin[2 \alpha + 2 t \omega]) \right) \Big) / \\
& \quad \left(16 (M0^2 (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega]) \right. \\
& \quad \left. \sin[\alpha]^2 \sin[t \omega]^2)^{3/2} \right) + \\
& \quad \left(\left(-4 M0 + 2 M0 \cos[2 t \omega] - M0 \cos[2 \alpha - 2 t \omega] - M0 \cos[2 \alpha + 2 t \omega] + 2 M0 \right. \right. \\
& \quad \cos[\alpha - t \omega]^2 \sec[\alpha]^2 + 2 M0 \cos[2 \alpha] \cos[\alpha - t \omega]^2 \sec[\alpha]^2 + 2 M0 \sec[\alpha]^2 \\
& \quad \sin[t \omega]^2 + 2 M0 \cos[2 \alpha] \sec[\alpha]^2 \sin[t \omega]^2 + 2 \sqrt{2} \sqrt{-M0^2 (-6 - 2 \cos[2 \alpha] + \\
& \quad 2 \cos[2 t \omega] - \cos[2 \alpha - 2 t \omega] - \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega]^2} \Big) \\
& \quad \left(4 M0 \omega \sin[2 t \omega] + 2 M0 \omega \sin[2 \alpha - 2 t \omega] - 2 M0 \omega \sin[2 \alpha + 2 t \omega] - \right. \\
& \quad \left(\sqrt{2} (2 M0^2 \omega \cos[t \omega] (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \right. \\
& \quad \left. \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega] + M0^2 \sin[\alpha]^2 \sin[t \omega]^2 \right. \\
& \quad \left. (4 \omega \sin[2 t \omega] + 2 \omega \sin[2 \alpha - 2 t \omega] - 2 \omega \sin[2 \alpha + 2 t \omega]) \right) \Big) / \\
& \quad \left(\sqrt{M0^2 (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega]^2} \right) \Big) / \\
& \quad \left(16 (1 + \cos[2 \alpha]) \sqrt{M0^2 (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \right. \\
& \quad \left. \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega]^2} \right) \\
& \quad \sqrt{\left(\frac{1}{1 + \cos[2 \alpha]} \left(-2 + 4 M0 - 2 \cos[2 \alpha] - 2 M0 \cos[2 t \omega] + M0 \cos[2 \alpha - 2 t \omega] + \right. \right. \\
& \quad \left. \left. M0 \cos[2 \alpha + 2 t \omega] - 2 \sqrt{2} \sqrt{M0^2 (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \right. \right.} \\
& \quad \left. \left. \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega]^2 \right) \right)} \Big) + \\
& \quad \left(\left(4 M0 - 2 M0 \cos[2 t \omega] + M0 \cos[2 \alpha - 2 t \omega] + M0 \cos[2 \alpha + 2 t \omega] - 2 M0 \right. \right. \\
& \quad \cos[\alpha - t \omega]^2 \sec[\alpha]^2 - 2 M0 \cos[2 \alpha] \cos[\alpha - t \omega]^2 \sec[\alpha]^2 - 2 M0 \sec[\alpha]^2 \\
& \quad \sin[t \omega]^2 - 2 M0 \cos[2 \alpha] \sec[\alpha]^2 \sin[t \omega]^2 + 2 \sqrt{2} \sqrt{-M0^2 (-6 - 2 \cos[2 \alpha] + \\
& \quad 2 \cos[2 t \omega] - \cos[2 \alpha - 2 t \omega] - \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega]^2} \Big) \\
& \quad \left(4 M0 \omega \sin[2 t \omega] + 2 M0 \omega \sin[2 \alpha - 2 t \omega] - 2 M0 \omega \sin[2 \alpha + 2 t \omega] + \right. \\
& \quad \left(\sqrt{2} (2 M0^2 \omega \cos[t \omega] (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \right. \\
& \quad \left. \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega] + M0^2 \sin[\alpha]^2 \sin[t \omega]^2 \right. \\
& \quad \left. (4 \omega \sin[2 t \omega] + 2 \omega \sin[2 \alpha - 2 t \omega] - 2 \omega \sin[2 \alpha + 2 t \omega]) \right) \Big) / \\
& \quad \left(\sqrt{M0^2 (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega]^2} \right) \Big) /
\end{aligned}$$

$$\begin{aligned}
& \left(4 \omega \sin[2 t \omega] + 2 \omega \sin[2 \alpha - 2 t \omega] - 2 \omega \sin[2 \alpha + 2 t \omega] \right) \Bigg) \Bigg/ \\
& \left(\sqrt{\left(M0^2 \left(6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega] \right) \sin[\alpha]^2 \sin[t \omega]^2 \right) \right) \Bigg) \Bigg/ \\
& \left(16 \left(1 + \cos[2 \alpha] \right) \sqrt{\left(M0^2 \left(6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \right. \right. \right. \\
& \quad \left. \left. \cos[2 \alpha + 2 t \omega] \right) \sin[\alpha]^2 \sin[t \omega]^2 \right) \Bigg) \Bigg/ \\
& \sqrt{\left(\frac{1}{1 + \cos[2 \alpha]} \left(-2 + 4 M0 - 2 \cos[2 \alpha] - 2 M0 \cos[2 t \omega] + M0 \cos[2 \alpha - 2 t \omega] + \right. \right. \\
& \quad \left. \left. M0 \cos[2 \alpha + 2 t \omega] + 2 \sqrt{2} \sqrt{\left(M0^2 \left(6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \right. \right. \right. \right. \\
& \quad \left. \left. \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega] \right) \sin[\alpha]^2 \sin[t \omega]^2 \right) \right) \Bigg) \Bigg) + \\
& \left(\sqrt{\left(\frac{1}{1 + \cos[2 \alpha]} \left(-2 + 4 M0 - 2 \cos[2 \alpha] - 2 M0 \cos[2 t \omega] + M0 \cos[2 \alpha - 2 t \omega] + \right. \right. \right. \\
& \quad \left. \left. M0 \cos[2 \alpha + 2 t \omega] + 2 \sqrt{2} \sqrt{\left(M0^2 \left(6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \right. \right. \right. \right. \\
& \quad \left. \left. \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega] \right) \sin[\alpha]^2 \sin[t \omega]^2 \right) \right) \Bigg) \Bigg) \\
& \left(-4 M0 \omega \cos[t \omega] \sec[\alpha]^2 \sin[t \omega] - 4 M0 \omega \cos[2 \alpha] \cos[t \omega] \sec[\alpha]^2 \right. \\
& \quad \sin[t \omega] + 4 M0 \omega \sin[2 t \omega] + 2 M0 \omega \sin[2 \alpha - 2 t \omega] - 4 M0 \omega \cos[\alpha - t \omega] \\
& \quad \sec[\alpha]^2 \sin[\alpha - t \omega] - 4 M0 \omega \cos[2 \alpha] \cos[\alpha - t \omega] \sec[\alpha]^2 \sin[\alpha - t \omega] - 2 M0 \\
& \quad \omega \sin[2 \alpha + 2 t \omega] + \left(\sqrt{2} \left(-2 M0^2 \omega \cos[t \omega] \left(-6 - 2 \cos[2 \alpha] + 2 \cos[2 t \omega] - \right. \right. \right. \\
& \quad \left. \left. \cos[2 \alpha - 2 t \omega] - \cos[2 \alpha + 2 t \omega] \right) \sin[\alpha]^2 \sin[t \omega] - M0^2 \sin[\alpha]^2 \right. \\
& \quad \left. \sin[t \omega]^2 \left(-4 \omega \sin[2 t \omega] - 2 \omega \sin[2 \alpha - 2 t \omega] + 2 \omega \sin[2 \alpha + 2 t \omega] \right) \right) \Bigg) \Bigg) \Bigg/ \\
& \left(\sqrt{\left(-M0^2 \left(-6 - 2 \cos[2 \alpha] + 2 \cos[2 t \omega] - \cos[2 \alpha - 2 t \omega] - \right. \right. \right. \\
& \quad \left. \left. \cos[2 \alpha + 2 t \omega] \right) \sin[\alpha]^2 \sin[t \omega]^2 \right) \Bigg) \Bigg) \Bigg/ \\
& \left(8 \sqrt{\left(M0^2 \left(6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega] \right) \right. \right. \\
& \quad \left. \left. \sin[\alpha]^2 \sin[t \omega]^2 \right) \right) + \\
& \left(\sqrt{\left(\frac{1}{1 + \cos[2 \alpha]} \left(-2 + 4 M0 - 2 \cos[2 \alpha] - 2 M0 \cos[2 t \omega] + M0 \cos[2 \alpha - 2 t \omega] + \right. \right. \right. \\
& \quad \left. \left. M0 \cos[2 \alpha + 2 t \omega] - 2 \sqrt{2} \sqrt{\left(M0^2 \left(6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \right. \right. \right. \right. \\
& \quad \left. \left. \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega] \right) \sin[\alpha]^2 \sin[t \omega]^2 \right) \right) \Bigg) \Bigg) \\
& \left(4 M0 \omega \cos[t \omega] \sec[\alpha]^2 \sin[t \omega] + 4 M0 \omega \cos[2 \alpha] \cos[t \omega] \sec[\alpha]^2 \right. \\
& \quad \sin[t \omega] - 4 M0 \omega \sin[2 t \omega] - 2 M0 \omega \sin[2 \alpha - 2 t \omega] + 4 M0 \omega \cos[\alpha - t \omega] \\
& \quad \sec[\alpha]^2 \sin[\alpha - t \omega] + 4 M0 \omega \cos[2 \alpha] \cos[\alpha - t \omega] \sec[\alpha]^2 \sin[\alpha - t \omega] + 2 M0 \\
& \quad \omega \sin[2 \alpha + 2 t \omega] + \left(\sqrt{2} \left(-2 M0^2 \omega \cos[t \omega] \left(-6 - 2 \cos[2 \alpha] + 2 \cos[2 t \omega] - \right. \right. \right. \\
& \quad \left. \left. \cos[2 \alpha - 2 t \omega] - \cos[2 \alpha + 2 t \omega] \right) \sin[\alpha]^2 \sin[t \omega] - M0^2 \sin[\alpha]^2 \right. \\
& \quad \left. \sin[t \omega]^2 \left(-4 \omega \sin[2 t \omega] - 2 \omega \sin[2 \alpha - 2 t \omega] + 2 \omega \sin[2 \alpha + 2 t \omega] \right) \right) \Bigg) \Bigg) \Bigg/ \\
& \left(\sqrt{\left(-M0^2 \left(-6 - 2 \cos[2 \alpha] + 2 \cos[2 t \omega] - \cos[2 \alpha - 2 t \omega] - \right. \right. \right. \\
& \quad \left. \left. \cos[2 \alpha + 2 t \omega] \right) \sin[\alpha]^2 \sin[t \omega]^2 \right) \Bigg) \Bigg) \Bigg/ \\
& \left(8 \sqrt{\left(M0^2 \left(6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega] \right) \right. \right. \\
& \quad \left. \left. \sin[\alpha]^2 \sin[t \omega]^2 \right) \right)
\end{aligned}$$

$$\begin{aligned}
& \left. \sin[\alpha]^2 \sin[t \omega]^2 \right) \Big) + \\
& s \left(- \left(\left(i M0 (1 + \cos[2 \alpha]) \sec[\alpha] \sin[t \omega]^2 \sqrt{\left(\frac{1}{1 + \cos[2 \alpha]} (-2 + 4 M0 - \right. \right. \right. \right. \\
& \quad 2 \cos[2 \alpha] - 2 M0 \cos[2 t \omega] + M0 \cos[2 \alpha - 2 t \omega] + M0 \cos[2 \alpha + 2 t \omega] - \\
& \quad 2 \sqrt{2} \sqrt{M0^2 (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \\
& \quad \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega]^2} \Big) \tan[\alpha] \Big) \Big) / \\
& \quad (2 \sqrt{M0^2 (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega])} \\
& \quad \sin[\alpha]^2 \sin[t \omega]^2) \Big) \Big) + \\
& \left(i M0 (1 + \cos[2 \alpha]) \sec[\alpha] \sin[t \omega]^2 \sqrt{\left(\frac{1}{1 + \cos[2 \alpha]} (-2 + 4 M0 - 2 \cos[2 \alpha] - \right. \right. \\
& \quad 2 M0 \cos[2 t \omega] + M0 \cos[2 \alpha - 2 t \omega] + M0 \cos[2 \alpha + 2 t \omega] + \\
& \quad 2 \sqrt{2} \sqrt{M0^2 (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \\
& \quad \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega]^2} \Big) \tan[\alpha] \Big) \Big) / \\
& \quad (2 \sqrt{M0^2 (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega])} \\
& \quad \sin[\alpha]^2 \sin[t \omega]^2) \Big) \Big) \Big) \\
& \nu_{21}[\alpha_, \omega_, t_, M0_, s_, r_, \theta_] := i \left(- \frac{1}{M0} 2 i \sec[\alpha] \sin[t \omega]^2 \tan[\alpha] \right. \\
& \quad \left(s \left(\left(i \cos[\alpha] \cot[\alpha] \csc[t \omega]^2 (-4 M0 + 2 M0 \cos[2 t \omega] - M0 \cos[2 \alpha - 2 t \omega] - M0 \right. \right. \right. \\
& \quad \cos[2 \alpha + 2 t \omega] + 2 M0 \cos[\alpha - t \omega]^2 \sec[\alpha]^2 + 2 M0 \cos[2 \alpha] \cos[\alpha - t \omega]^2 \\
& \quad \sec[\alpha]^2 + 2 M0 \sec[\alpha]^2 \sin[t \omega]^2 + 2 M0 \cos[2 \alpha] \sec[\alpha]^2 \sin[t \omega]^2 + 2 \sqrt{2} \\
& \quad \sqrt{(-M0^2 (-6 - 2 \cos[2 \alpha] + 2 \cos[2 t \omega] - \cos[2 \alpha - 2 t \omega] - \cos[2 \alpha + 2 t \omega])} \\
& \quad \sin[\alpha]^2 \sin[t \omega]^2) \sqrt{\left(\frac{1}{1 + \cos[2 \alpha]} (-2 + 4 M0 - 2 \cos[2 \alpha] - 2 M0 \cos[2 t \right.} \\
& \quad \omega + M0 \cos[2 \alpha - 2 t \omega] + M0 \cos[2 \alpha + 2 t \omega] - 2 \sqrt{2} \sqrt{M0^2 (6 + 2 \cos[2 \alpha] - \\
& \quad 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega]^2} \Big) \Big) \\
& \quad \left(4 M0 - 2 M0 \cos[2 t \omega] + M0 \cos[2 \alpha - 2 t \omega] + M0 \cos[2 \alpha + 2 t \omega] - 2 M0 \right. \\
& \quad \cos[\alpha - t \omega]^2 \sec[\alpha]^2 - 2 M0 \cos[2 \alpha] \cos[\alpha - t \omega]^2 \sec[\alpha]^2 - 2 M0 \sec[\alpha]^2 \\
& \quad \sin[t \omega]^2 - 2 M0 \cos[2 \alpha] \sec[\alpha]^2 \sin[t \omega]^2 + 2 \sqrt{2} \sqrt{M0^2 (6 + 2 \cos[2 \alpha] - \\
& \quad 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega]^2} \Big) \Big) \Big) / \\
& \quad (32 M0 (1 + \cos[2 \alpha]) \sqrt{M0^2 (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \\
& \quad \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega]^2} \Big) - \\
& \quad \left(i \cos[\alpha] \cot[\alpha] \csc[t \omega]^2 (4 M0 - 2 M0 \cos[2 t \omega] + M0 \cos[2 \alpha - 2 t \omega] + M0 \right. \\
& \quad \cos[2 \alpha + 2 t \omega] - 2 M0 \cos[\alpha - t \omega]^2 \sec[\alpha]^2 - 2 M0 \cos[2 \alpha] \\
& \quad \cos[\alpha - t \omega]^2 \sec[\alpha]^2 - 2 M0 \sec[\alpha]^2 \sin[t \omega]^2 - 2 M0 \cos[2 \alpha] \\
& \quad \sec[\alpha]^2 \sin[t \omega]^2 + 2 \sqrt{2} \sqrt{(-M0^2 (-6 - 2 \cos[2 \alpha] + 2 \cos[2 t \omega] - \\
\end{aligned}$$

$$\begin{aligned}
& \cos[2\alpha - 2t\omega] - \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2) \Big) \\
& \sqrt{\left(\frac{1}{1 + \cos[2\alpha]} \left(-2 + 4M\theta - 2\cos[2\alpha] - 2M\theta \cos[2t\omega] + M\theta \cos[2\alpha - 2t\omega] + \right. \right. \\
& \quad M\theta \cos[2\alpha + 2t\omega] + 2\sqrt{2} \sqrt{M\theta^2 (6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2} \Big) \Big) \\
& \quad \left(-4M\theta + 2M\theta \cos[2t\omega] - M\theta \cos[2\alpha - 2t\omega] - M\theta \cos[2\alpha + 2t\omega] + 2M\theta \cos[\alpha - t\omega]^2 \sec[\alpha]^2 + 2M\theta \cos[2\alpha] \cos[\alpha - t\omega]^2 \sec[\alpha]^2 + 2M\theta \sec[\alpha]^2 \sin[t\omega]^2 + 2M\theta \cos[2\alpha] \sec[\alpha]^2 \sin[t\omega]^2 + 2\sqrt{2} \sqrt{M\theta^2 (6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2} \Big) \right) \Big) / \\
& \quad \left(32M\theta (1 + \cos[2\alpha]) \sqrt{M\theta^2 (6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2} \Big) \right) - \\
& \quad \left(- \left(\sqrt{\left(\frac{1}{1 + \cos[2\alpha]} \left(-2 + 4M\theta - 2\cos[2\alpha] - 2M\theta \cos[2t\omega] + M\theta \cos[2\alpha - 2t\omega] + \right. \right. \right. \right. \\
& \quad \left. \left. \left. M\theta \cos[2\alpha + 2t\omega] - 2\sqrt{2} \sqrt{M\theta^2 (6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2} \right) \right) \right) \right. \\
& \quad \left(4M\theta - 2M\theta \cos[2t\omega] + M\theta \cos[2\alpha - 2t\omega] + M\theta \cos[2\alpha + 2t\omega] - 2M\theta \cos[\alpha - t\omega]^2 \sec[\alpha]^2 - 2M\theta \cos[2\alpha] \cos[\alpha - t\omega]^2 \sec[\alpha]^2 - 2M\theta \sec[\alpha]^2 \sin[t\omega]^2 - 2M\theta \cos[2\alpha] \sec[\alpha]^2 \sin[t\omega]^2 + 2\sqrt{2} \sqrt{M\theta^2 (6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2} \right) \left(2M\theta^2 \omega \cos[t\omega] (6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega] + M\theta^2 \sin[\alpha]^2 \sin[t\omega]^2 (4\omega \sin[2t\omega] + 2\omega \sin[2\alpha - 2t\omega] - 2\omega \sin[2\alpha + 2t\omega]) \right) \Big) \Big) / \\
& \quad \left(16 (M\theta^2 (6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2)^{3/2} \right) \Big) - \\
& \quad \left(\sqrt{\left(\frac{1}{1 + \cos[2\alpha]} \left(-2 + 4M\theta - 2\cos[2\alpha] - 2M\theta \cos[2t\omega] + M\theta \cos[2\alpha - 2t\omega] + \right. \right. \right. \\
& \quad \left. \left. \left. M\theta \cos[2\alpha + 2t\omega] + 2\sqrt{2} \sqrt{M\theta^2 (6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2} \right) \right) \right) \right. \\
& \quad \left(-4M\theta + 2M\theta \cos[2t\omega] - M\theta \cos[2\alpha - 2t\omega] - M\theta \cos[2\alpha + 2t\omega] + 2M\theta \cos[\alpha - t\omega]^2 \sec[\alpha]^2 + 2M\theta \cos[2\alpha] \cos[\alpha - t\omega]^2 \sec[\alpha]^2 + 2M\theta \sec[\alpha]^2 \sin[t\omega]^2 + 2M\theta \cos[2\alpha] \sec[\alpha]^2 \sin[t\omega]^2 + 2\sqrt{2} \sqrt{M\theta^2 (6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2} \right) \left(2M\theta^2 \omega \cos[t\omega] (6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega] + M\theta^2 \sin[\alpha]^2 \sin[t\omega]^2 (4\omega \sin[2t\omega] + 2\omega \sin[2\alpha - 2t\omega] - 2\omega \sin[2\alpha + 2t\omega]) \right) \Big) \Big) /
\end{aligned}$$

$$\begin{aligned}
& \left(16 \left(M0^2 \left(6 + 2 \cos[2\alpha] - 2 \cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega] \right) \right. \right. \\
& \quad \left. \left. \sin[\alpha]^2 \sin[t\omega]^2 \right)^{3/2} \right) + \\
& \left(\left(4 M0 - 2 M0 \cos[2t\omega] + M0 \cos[2\alpha - 2t\omega] + M0 \cos[2\alpha + 2t\omega] - 2 M0 \right. \right. \\
& \quad \cos[\alpha - t\omega]^2 \sec[\alpha]^2 - 2 M0 \cos[2\alpha] \cos[\alpha - t\omega]^2 \sec[\alpha]^2 - 2 M0 \sec[\alpha]^2 \\
& \quad \sin[t\omega]^2 - 2 M0 \cos[2\alpha] \sec[\alpha]^2 \sin[t\omega]^2 + 2 \sqrt{2} \sqrt{M0^2 \left(6 + 2 \cos[2\alpha] - \right.} \\
& \quad \left. \left. 2 \cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega] \right) \sin[\alpha]^2 \sin[t\omega]^2} \right) - \\
& \left(4 M0 \omega \sin[2t\omega] + 2 M0 \omega \sin[2\alpha - 2t\omega] - 2 M0 \omega \sin[2\alpha + 2t\omega] - \right. \\
& \quad \left(\sqrt{2} \left(2 M0^2 \omega \cos[t\omega] \left(6 + 2 \cos[2\alpha] - 2 \cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega] \right) \sin[\alpha]^2 \sin[t\omega] + \right. \right. \\
& \quad \left. \left. M0^2 \sin[\alpha]^2 \sin[t\omega]^2 \left(4 \omega \sin[2t\omega] + 2 \omega \sin[2\alpha - 2t\omega] - 2 \omega \sin[2\alpha + 2t\omega] \right) \right) \right) \right) / \left(\sqrt{M0^2 \left(6 + 2 \cos[2\alpha] - \right.} \right. \\
& \quad \left. \left. 2 \cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega] \right) \sin[\alpha]^2 \sin[t\omega]^2} \right) \Big) \Big) / \\
& \left(16 \left(1 + \cos[2\alpha] \right) \sqrt{M0^2 \left(6 + 2 \cos[2\alpha] - 2 \cos[2t\omega] + \cos[2\alpha - 2t\omega] + \right.} \right. \\
& \quad \left. \left. \cos[2\alpha + 2t\omega] \right) \sin[\alpha]^2 \sin[t\omega]^2} \right) \\
& \sqrt{\left(\frac{1}{1 + \cos[2\alpha]} \left(-2 + 4 M0 - 2 \cos[2\alpha] - 2 M0 \cos[2t\omega] + M0 \cos[2\alpha - 2t\omega] + \right. \right. \\
& \quad \left. \left. M0 \cos[2\alpha + 2t\omega] - 2 \sqrt{2} \sqrt{M0^2 \left(6 + 2 \cos[2\alpha] - 2 \cos[2t\omega] + \right.} \right. \right. \\
& \quad \left. \left. \left. \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega] \right) \sin[\alpha]^2 \sin[t\omega]^2} \right) \right) \right) \Big) + \\
& \left(\left(-4 M0 + 2 M0 \cos[2t\omega] - M0 \cos[2\alpha - 2t\omega] - M0 \cos[2\alpha + 2t\omega] + 2 M0 \right. \right. \\
& \quad \cos[\alpha - t\omega]^2 \sec[\alpha]^2 + 2 M0 \cos[2\alpha] \cos[\alpha - t\omega]^2 \sec[\alpha]^2 + 2 M0 \sec[\alpha]^2 \\
& \quad \sin[t\omega]^2 + 2 M0 \cos[2\alpha] \sec[\alpha]^2 \sin[t\omega]^2 + 2 \sqrt{2} \sqrt{M0^2 \left(6 + 2 \cos[2\alpha] - \right.} \\
& \quad \left. \left. 2 \cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega] \right) \sin[\alpha]^2 \sin[t\omega]^2} \right) - \\
& \left(4 M0 \omega \sin[2t\omega] + 2 M0 \omega \sin[2\alpha - 2t\omega] - 2 M0 \omega \sin[2\alpha + 2t\omega] + \right. \\
& \quad \left(\sqrt{2} \left(2 M0^2 \omega \cos[t\omega] \left(6 + 2 \cos[2\alpha] - 2 \cos[2t\omega] + \cos[2\alpha - 2t\omega] + \right. \right. \right. \\
& \quad \left. \left. \cos[2\alpha + 2t\omega] \right) \sin[\alpha]^2 \sin[t\omega] + M0^2 \sin[\alpha]^2 \sin[t\omega]^2 \right. \\
& \quad \left. \left. \left(4 \omega \sin[2t\omega] + 2 \omega \sin[2\alpha - 2t\omega] - 2 \omega \sin[2\alpha + 2t\omega] \right) \right) \right) \Big) / \\
& \quad \left(\sqrt{M0^2 \left(6 + 2 \cos[2\alpha] - 2 \cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega] \right) \sin[\alpha]^2 \sin[t\omega]^2} \right) \Big) \Big) / \\
& \left(16 \left(1 + \cos[2\alpha] \right) \sqrt{M0^2 \left(6 + 2 \cos[2\alpha] - 2 \cos[2t\omega] + \cos[2\alpha - 2t\omega] + \right.} \right. \\
& \quad \left. \left. \cos[2\alpha + 2t\omega] \right) \sin[\alpha]^2 \sin[t\omega]^2} \right) \\
& \sqrt{\left(\frac{1}{1 + \cos[2\alpha]} \left(-2 + 4 M0 - 2 \cos[2\alpha] - 2 M0 \cos[2t\omega] + M0 \cos[2\alpha - 2t\omega] + \right. \right. \\
& \quad \left. \left. M0 \cos[2\alpha + 2t\omega] + 2 \sqrt{2} \sqrt{M0^2 \left(6 + 2 \cos[2\alpha] - 2 \cos[2t\omega] + \right.} \right. \right. \\
& \quad \left. \left. \left. \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega] \right) \sin[\alpha]^2 \sin[t\omega]^2} \right) \right) \right) \Big) \Big) + \\
& \left(\sqrt{\left(\frac{1}{1 + \cos[2\alpha]} \left(-2 + 4 M0 - 2 \cos[2\alpha] - 2 M0 \cos[2t\omega] + M0 \cos[2\alpha - 2t\omega] + \right. \right. \right. \\
& \quad \left. \left. \left. M0 \cos[2\alpha + 2t\omega] \right) \right) \right) \Big) \Big)
\end{aligned}$$

$$\begin{aligned}
& M0 \cos[2\alpha + 2t\omega] - 2\sqrt{2} \sqrt{M0^2 (6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2} \\
& \left(-4M0\omega \cos[t\omega] \sec[\alpha]^2 \sin[t\omega] - 4M0\omega \cos[2\alpha] \cos[t\omega] \sec[\alpha]^2 \sin[t\omega] + 4M0\omega \sin[2t\omega] + 2M0\omega \sin[2\alpha - 2t\omega] - 4M0\omega \cos[\alpha - t\omega] \sec[\alpha]^2 \sin[\alpha - t\omega] - 4M0\omega \cos[2\alpha] \cos[\alpha - t\omega] \sec[\alpha]^2 \sin[\alpha - t\omega] - 2M0\omega \sin[2\alpha + 2t\omega] + \left(\sqrt{2} (2M0^2\omega \cos[t\omega] (6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega] + M0^2 \sin[\alpha]^2 \sin[t\omega]^2 (4\omega \sin[2t\omega] + 2\omega \sin[2\alpha - 2t\omega] - 2\omega \sin[2\alpha + 2t\omega]) \right) \right) / \right. \\
& \left. \left(\sqrt{M0^2 (6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2} \right) \right) / \\
& \left(8\sqrt{M0^2 (6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2} \right) + \\
& \left(\sqrt{\frac{1}{1 + \cos[2\alpha]} (-2 + 4M0 - 2\cos[2\alpha] - 2M0\cos[2t\omega] + M0\cos[2\alpha - 2t\omega] + M0\cos[2\alpha + 2t\omega] + 2\sqrt{2} \sqrt{M0^2 (6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2})} \right) \\
& \left(4M0\omega \cos[t\omega] \sec[\alpha]^2 \sin[t\omega] + 4M0\omega \cos[2\alpha] \cos[t\omega] \sec[\alpha]^2 \sin[t\omega] - 4M0\omega \sin[2t\omega] - 2M0\omega \sin[2\alpha - 2t\omega] + 4M0\omega \cos[\alpha - t\omega] \sec[\alpha]^2 \sin[\alpha - t\omega] + 4M0\omega \cos[2\alpha] \cos[\alpha - t\omega] \sec[\alpha]^2 \sin[\alpha - t\omega] + 2M0\omega \sin[2\alpha + 2t\omega] + \left(\sqrt{2} (2M0^2\omega \cos[t\omega] (6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega] + M0^2 \sin[\alpha]^2 \sin[t\omega]^2 (4\omega \sin[2t\omega] + 2\omega \sin[2\alpha - 2t\omega] - 2\omega \sin[2\alpha + 2t\omega]) \right) \right) / \right. \\
& \left. \left(\sqrt{M0^2 (6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2} \right) \right) / \\
& \left(8\sqrt{M0^2 (6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2} \right) - \\
& s \left(- \left(\left(i M0 (1 + \cos[2\alpha]) \sec[\alpha] \sin[t\omega]^2 \sqrt{\frac{1}{1 + \cos[2\alpha]} (-2 + 4M0 - 2\cos[2\alpha] - 2M0\cos[2t\omega] + M0\cos[2\alpha - 2t\omega] + M0\cos[2\alpha + 2t\omega] - 2\sqrt{2} \sqrt{M0^2 (6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2})} \right) \tan[\alpha] \right) / \right. \\
& \left. \left(2\sqrt{M0^2 (6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2} \right) + \left(i M0 (1 + \cos[2\alpha]) \sec[\alpha] \sin[t\omega]^2 \sqrt{\frac{1}{1 + \cos[2\alpha]} (-2 + 4M0 - 2\cos[2\alpha] - 2M0\cos[2t\omega] + M0\cos[2\alpha - 2t\omega] + M0\cos[2\alpha + 2t\omega] + 2\sqrt{2} \sqrt{M0^2 (6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2})} \right) \right)
\end{aligned}$$

$$\begin{aligned}
& \left. \left(\cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega] \right) \sin[\alpha]^2 \sin[t\omega]^2 \right) \Bigg) \tan[\alpha] \Bigg) / \\
& \left(2 \sqrt{M\theta^2 (6 + 2 \cos[2\alpha] - 2 \cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega])} \right. \\
& \quad \left. \sin[\alpha]^2 \sin[t\omega]^2 \right) \Bigg) + \frac{1}{M\theta} \sec[\alpha]^2 (\cos[\alpha - t\omega]^2 + \sin[t\omega]^2) \\
& \left(s \left(\left((-4 M\theta + 2 M\theta \cos[2t\omega] - M\theta \cos[2\alpha - 2t\omega] - M\theta \cos[2\alpha + 2t\omega] + 2 M\theta \right. \right. \right. \\
& \quad \cos[\alpha - t\omega]^2 \sec[\alpha]^2 + 2 M\theta \cos[2\alpha] \cos[\alpha - t\omega]^2 \sec[\alpha]^2 + 2 M\theta \sec[\alpha]^2 \\
& \quad \sin[t\omega]^2 + 2 M\theta \cos[2\alpha] \sec[\alpha]^2 \sin[t\omega]^2 + 2 \sqrt{2} \sqrt{-M\theta^2 (-6 - 2 \cos[2\alpha] + \\
& \quad 2 \cos[2t\omega] - \cos[2\alpha - 2t\omega] - \cos[2\alpha + 2t\omega])} \sin[\alpha]^2 \sin[t\omega]^2) \Bigg) \\
& \quad \sqrt{\left(\frac{1}{1 + \cos[2\alpha]} (-2 + 4 M\theta - 2 \cos[2\alpha] - 2 M\theta \cos[2t\omega] + M\theta \cos[2\alpha - 2t\omega] + \right.} \\
& \quad \left. M\theta \cos[2\alpha + 2t\omega] - 2 \sqrt{2} \sqrt{M\theta^2 (6 + 2 \cos[2\alpha] - 2 \cos[2t\omega] + \right.} \\
& \quad \left. \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega])} \sin[\alpha]^2 \sin[t\omega]^2) \Bigg) \Bigg) / \\
& \left(8 \sqrt{M\theta^2 (6 + 2 \cos[2\alpha] - 2 \cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega])} \right. \\
& \quad \left. \sin[\alpha]^2 \sin[t\omega]^2) \right) + \\
& \left(\left(4 M\theta - 2 M\theta \cos[2t\omega] + M\theta \cos[2\alpha - 2t\omega] + M\theta \cos[2\alpha + 2t\omega] - 2 M\theta \right. \right. \\
& \quad \cos[\alpha - t\omega]^2 \sec[\alpha]^2 - 2 M\theta \cos[2\alpha] \cos[\alpha - t\omega]^2 \sec[\alpha]^2 - 2 M\theta \sec[\alpha]^2 \\
& \quad \sin[t\omega]^2 - 2 M\theta \cos[2\alpha] \sec[\alpha]^2 \sin[t\omega]^2 + 2 \sqrt{2} \sqrt{-M\theta^2 (-6 - 2 \cos[2\alpha] + \\
& \quad 2 \cos[2t\omega] - \cos[2\alpha - 2t\omega] - \cos[2\alpha + 2t\omega])} \sin[\alpha]^2 \sin[t\omega]^2) \Bigg) \\
& \quad \sqrt{\left(\frac{1}{1 + \cos[2\alpha]} (-2 + 4 M\theta - 2 \cos[2\alpha] - 2 M\theta \cos[2t\omega] + M\theta \cos[2\alpha - 2t\omega] + \right.} \\
& \quad \left. M\theta \cos[2\alpha + 2t\omega] + 2 \sqrt{2} \sqrt{M\theta^2 (6 + 2 \cos[2\alpha] - 2 \cos[2t\omega] + \right.} \\
& \quad \left. \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega])} \sin[\alpha]^2 \sin[t\omega]^2) \Bigg) \Bigg) / \\
& \left(8 \sqrt{M\theta^2 (6 + 2 \cos[2\alpha] - 2 \cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega])} \right. \\
& \quad \left. \sin[\alpha]^2 \sin[t\omega]^2) \right) \Bigg) - \\
& s \left(\left(\sqrt{\left(\frac{1}{1 + \cos[2\alpha]} (-2 + 4 M\theta - 2 \cos[2\alpha] - 2 M\theta \cos[2t\omega] + M\theta \cos[2\alpha - 2t\omega] + \right.} \right. \right. \\
& \quad \left. \left. M\theta \cos[2\alpha + 2t\omega] - 2 \sqrt{2} \sqrt{M\theta^2 (6 + 2 \cos[2\alpha] - 2 \cos[2t\omega] + \right.} \right. \\
& \quad \left. \left. \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega])} \sin[\alpha]^2 \sin[t\omega]^2) \right) \right) \\
& \left(4 M\theta - 2 M\theta \cos[2t\omega] + M\theta \cos[2\alpha - 2t\omega] + M\theta \cos[2\alpha + 2t\omega] - 2 M\theta \right. \\
& \quad \cos[\alpha - t\omega]^2 \sec[\alpha]^2 - 2 M\theta \cos[2\alpha] \cos[\alpha - t\omega]^2 \sec[\alpha]^2 - 2 M\theta \sec[\alpha]^2 \\
& \quad \sin[t\omega]^2 - 2 M\theta \cos[2\alpha] \sec[\alpha]^2 \sin[t\omega]^2 + 2 \sqrt{2} \sqrt{M\theta^2 (6 + 2 \cos[2\alpha] - \\
& \quad 2 \cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega])} \sin[\alpha]^2 \sin[t\omega]^2) \Bigg) \Bigg) / \\
& \left(8 \sqrt{M\theta^2 (6 + 2 \cos[2\alpha] - 2 \cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega])} \right. \\
& \quad \left. \sin[\alpha]^2 \sin[t\omega]^2) \right) +
\end{aligned}$$

$$\begin{aligned}
& \left(\sqrt{\left(\frac{1}{1 + \cos[2\alpha]} \left(-2 + 4M\theta - 2\cos[2\alpha] - 2M\theta\cos[2t\omega] + M\theta\cos[2\alpha - 2t\omega] + \right. \right. \right. \\
& \quad \left. \left. \left. M\theta\cos[2\alpha + 2t\omega] + 2\sqrt{2}\sqrt{M\theta^2(6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \right. \right. \right. \\
& \quad \left. \left. \left. \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega])\sin[\alpha]^2\sin[t\omega]^2 \right) \right) \right) \\
& \quad \left(-4M\theta + 2M\theta\cos[2t\omega] - M\theta\cos[2\alpha - 2t\omega] - M\theta\cos[2\alpha + 2t\omega] + 2M\theta \right. \\
& \quad \cos[\alpha - t\omega]^2\sec[\alpha]^2 + 2M\theta\cos[2\alpha]\cos[\alpha - t\omega]^2\sec[\alpha]^2 + 2M\theta\sec[\alpha]^2 \\
& \quad \sin[t\omega]^2 + 2M\theta\cos[2\alpha]\sec[\alpha]^2\sin[t\omega]^2 + 2\sqrt{2}\sqrt{M\theta^2(6 + 2\cos[2\alpha] - \\
& \quad \left. 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega])\sin[\alpha]^2\sin[t\omega]^2} \right) \Big) \Big) / \\
& \quad \left(8\sqrt{M\theta^2(6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega])} \right. \\
& \quad \left. \sin[\alpha]^2\sin[t\omega]^2 \right) \Big) + \\
& e^{-i\theta} r \left(- \left(\left(iM\theta(1 + \cos[2\alpha])\sec[\alpha]\sin[t\omega]^2 \sqrt{\left(\frac{1}{1 + \cos[2\alpha]} \left(-2 + 4M\theta - \right. \right. \right. \right. \right. \right. \\
& \quad \left. \left. \left. 2\cos[2\alpha] - 2M\theta\cos[2t\omega] + M\theta\cos[2\alpha - 2t\omega] + M\theta\cos[2\alpha + 2t\omega] - \right. \right. \right. \\
& \quad \left. \left. \left. 2\sqrt{2}\sqrt{M\theta^2(6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \right. \right. \right. \\
& \quad \left. \left. \left. \cos[2\alpha + 2t\omega])\sin[\alpha]^2\sin[t\omega]^2 \right) \right) \tan[\alpha] \right) \Big) / \\
& \quad \left(2\sqrt{M\theta^2(6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega])} \right. \\
& \quad \left. \sin[\alpha]^2\sin[t\omega]^2 \right) \Big) + \left(iM\theta(1 + \cos[2\alpha])\sec[\alpha]\sin[t\omega]^2 \right. \\
& \quad \sqrt{\left(\frac{1}{1 + \cos[2\alpha]} \left(-2 + 4M\theta - 2\cos[2\alpha] - 2M\theta\cos[2t\omega] + M\theta\cos[2\alpha - 2t\omega] + \right. \right. \\
& \quad \left. \left. M\theta\cos[2\alpha + 2t\omega] + 2\sqrt{2}\sqrt{M\theta^2(6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \right. \right. \\
& \quad \left. \left. \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega])\sin[\alpha]^2\sin[t\omega]^2 \right) \right) \tan[\alpha] \Big) \Big) / \\
& \quad \left(2\sqrt{M\theta^2(6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega])} \right. \\
& \quad \left. \sin[\alpha]^2\sin[t\omega]^2 \right) \Big) - \\
& e^{i\theta} r \left(- \left(\left(iM\theta(1 + \cos[2\alpha])\sec[\alpha]\sin[t\omega]^2 \sqrt{\left(\frac{1}{1 + \cos[2\alpha]} \left(-2 + 4M\theta - \right. \right. \right. \right. \right. \right. \\
& \quad \left. \left. \left. 2\cos[2\alpha] - 2M\theta\cos[2t\omega] + M\theta\cos[2\alpha - 2t\omega] + M\theta\cos[2\alpha + 2t\omega] - \right. \right. \right. \\
& \quad \left. \left. \left. 2\sqrt{2}\sqrt{M\theta^2(6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \right. \right. \right. \\
& \quad \left. \left. \left. \cos[2\alpha + 2t\omega])\sin[\alpha]^2\sin[t\omega]^2 \right) \right) \tan[\alpha] \right) \Big) / \\
& \quad \left(2\sqrt{M\theta^2(6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega])} \right. \\
& \quad \left. \sin[\alpha]^2\sin[t\omega]^2 \right) \Big) + \left(iM\theta(1 + \cos[2\alpha])\sec[\alpha]\sin[t\omega]^2 \right. \\
& \quad \sqrt{\left(\frac{1}{1 + \cos[2\alpha]} \left(-2 + 4M\theta - 2\cos[2\alpha] - 2M\theta\cos[2t\omega] + M\theta\cos[2\alpha - 2t\omega] + \right. \right. \\
& \quad \left. \left. M\theta\cos[2\alpha + 2t\omega] + 2\sqrt{2}\sqrt{M\theta^2(6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \right. \right. \\
& \quad \left. \left. \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega])\sin[\alpha]^2\sin[t\omega]^2 \right) \right) \tan[\alpha] \Big) \Big) / \\
& \quad \left(2\sqrt{M\theta^2(6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega])} \right. \\
& \quad \left. \sin[\alpha]^2\sin[t\omega]^2 \right) \Big) -
\end{aligned}$$

$$\begin{aligned}
& \left. \left(\cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega] \right) \sin[\alpha]^2 \sin[t\omega]^2 \right) \tan[\alpha] \Bigg/ \\
& \left(2 \sqrt{M\theta^2 (6 + 2 \cos[2\alpha] - 2 \cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega])} \right. \\
& \left. \sin[\alpha]^2 \sin[t\omega]^2 \right) \Bigg) - \\
& i \left(- \left(\left(i M\theta \omega (1 + \cos[2\alpha]) \cos[t\omega] \sec[\alpha] \sin[t\omega] \sqrt{\left(\frac{1}{1 + \cos[2\alpha]} \right.} \right. \right. \right. \\
& \left. \left. \left(-2 + 4 M\theta - 2 \cos[2\alpha] - 2 M\theta \cos[2t\omega] + M\theta \cos[2\alpha - 2t\omega] + \right. \right. \right. \\
& \left. \left. \left. M\theta \cos[2\alpha + 2t\omega] - 2 \sqrt{2} \sqrt{M\theta^2 (6 + 2 \cos[2\alpha] - 2 \cos[2t\omega] + \right. \right. \right. \\
& \left. \left. \left. \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2 \right) \right) \tan[\alpha] \right) \Bigg/ \\
& \left(\sqrt{M\theta^2 (6 + 2 \cos[2\alpha] - 2 \cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega])} \right. \\
& \left. \sin[\alpha]^2 \sin[t\omega]^2 \right) \Bigg) + \\
& \left(i M\theta \omega (1 + \cos[2\alpha]) \cos[t\omega] \sec[\alpha] \sin[t\omega] \sqrt{\left(\frac{1}{1 + \cos[2\alpha]} \right.} \right. \\
& \left. \left(-2 + 4 M\theta - 2 \cos[2\alpha] - 2 M\theta \cos[2t\omega] + M\theta \cos[2\alpha - 2t\omega] + \right. \right. \\
& \left. \left. M\theta \cos[2\alpha + 2t\omega] + 2 \sqrt{2} \sqrt{M\theta^2 (6 + 2 \cos[2\alpha] - 2 \cos[2t\omega] + \right. \right. \\
& \left. \left. \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2 \right) \right) \tan[\alpha] \right) \Bigg/ \\
& \left(\sqrt{M\theta^2 (6 + 2 \cos[2\alpha] - 2 \cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega])} \right. \\
& \left. \sin[\alpha]^2 \sin[t\omega]^2 \right) + \left(i M\theta (1 + \cos[2\alpha]) \sec[\alpha] \sin[t\omega]^2 \right. \\
& \left. \sqrt{\left(\frac{1}{1 + \cos[2\alpha]} \right.} \left(-2 + 4 M\theta - 2 \cos[2\alpha] - 2 M\theta \cos[2t\omega] + M\theta \cos[2\alpha - 2t\omega] + \right. \right. \\
& \left. \left. M\theta \cos[2\alpha + 2t\omega] - 2 \sqrt{2} \sqrt{M\theta^2 (6 + 2 \cos[2\alpha] - 2 \cos[2t\omega] + \right. \right. \\
& \left. \left. \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2 \right) \right) \Bigg) \\
& \left(2 M\theta^2 \omega \cos[t\omega] (6 + 2 \cos[2\alpha] - 2 \cos[2t\omega] + \cos[2\alpha - 2t\omega] + \right. \\
& \left. \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega] + M\theta^2 \sin[\alpha]^2 \sin[t\omega]^2 \right. \\
& \left. (4 \omega \sin[2t\omega] + 2 \omega \sin[2\alpha - 2t\omega] - 2 \omega \sin[2\alpha + 2t\omega]) \right) \tan[\alpha] \Bigg/ \\
& \left(4 (M\theta^2 (6 + 2 \cos[2\alpha] - 2 \cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega]) \right. \\
& \left. \sin[\alpha]^2 \sin[t\omega]^2)^{3/2} \right) - \left(i M\theta (1 + \cos[2\alpha]) \sec[\alpha] \sin[t\omega]^2 \right. \\
& \left. \sqrt{\left(\frac{1}{1 + \cos[2\alpha]} \right.} \left(-2 + 4 M\theta - 2 \cos[2\alpha] - 2 M\theta \cos[2t\omega] + M\theta \cos[2\alpha - 2t\omega] + \right. \right. \\
& \left. \left. M\theta \cos[2\alpha + 2t\omega] + 2 \sqrt{2} \sqrt{M\theta^2 (6 + 2 \cos[2\alpha] - 2 \cos[2t\omega] + \right. \right. \\
& \left. \left. \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2 \right) \right) \Bigg) \\
& \left(2 M\theta^2 \omega \cos[t\omega] (6 + 2 \cos[2\alpha] - 2 \cos[2t\omega] + \cos[2\alpha - 2t\omega] + \right. \\
& \left. \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega] + M\theta^2 \sin[\alpha]^2 \sin[t\omega]^2 \right.
\end{aligned}$$

$$\begin{aligned}
& \left(4 \omega \sin[2 t \omega] + 2 \omega \sin[2 \alpha - 2 t \omega] - 2 \omega \sin[2 \alpha + 2 t \omega] \right) \tan[\alpha] \Bigg) / \\
& \left(4 \left(M0^2 (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega]) \right. \right. \\
& \quad \left. \sin[\alpha]^2 \sin[t \omega]^2 \right)^{3/2} - \\
& \left(i M0 \sec[\alpha] \sin[t \omega]^2 \left(4 M0 \omega \sin[2 t \omega] + 2 M0 \omega \sin[2 \alpha - 2 t \omega] - 2 M0 \omega \right. \right. \\
& \quad \left. \sin[2 \alpha + 2 t \omega] - \left(\sqrt{2} (2 M0^2 \omega \cos[t \omega] (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \right. \right. \\
& \quad \left. \left. \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega] + M0^2 \sin[\alpha]^2 \right. \right. \\
& \quad \left. \left. \sin[t \omega]^2 (4 \omega \sin[2 t \omega] + 2 \omega \sin[2 \alpha - 2 t \omega] - 2 \omega \sin[2 \alpha + 2 t \omega]) \right) \right) \Bigg) / \\
& \left(\sqrt{M0^2 (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega])} \right. \\
& \quad \left. \sin[\alpha]^2 \sin[t \omega]^2 \right) \tan[\alpha] \Bigg) / \\
& \left(4 \sqrt{M0^2 (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega])} \right. \\
& \quad \left. \sin[\alpha]^2 \sin[t \omega]^2 \right) \sqrt{\left(\frac{1}{1 + \cos[2 \alpha]} (-2 + 4 M0 - 2 \cos[2 \alpha] - 2 M0 \cos[2 t \omega] + \right.} \\
& \quad \left. M0 \cos[2 \alpha - 2 t \omega] + M0 \cos[2 \alpha + 2 t \omega] - 2 \sqrt{2} \sqrt{M0^2 (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \right.} \\
& \quad \left. \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega]^2 \right) \Bigg) + \\
& \left(i M0 \sec[\alpha] \sin[t \omega]^2 \left(4 M0 \omega \sin[2 t \omega] + 2 M0 \omega \sin[2 \alpha - 2 t \omega] - 2 M0 \omega \right. \right. \\
& \quad \left. \sin[2 \alpha + 2 t \omega] + \left(\sqrt{2} (2 M0^2 \omega \cos[t \omega] (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \right. \right. \\
& \quad \left. \left. \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega] + M0^2 \sin[\alpha]^2 \right. \right. \\
& \quad \left. \left. \sin[t \omega]^2 (4 \omega \sin[2 t \omega] + 2 \omega \sin[2 \alpha - 2 t \omega] - 2 \omega \sin[2 \alpha + 2 t \omega]) \right) \right) \Bigg) / \\
& \left(\sqrt{M0^2 (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega])} \right. \\
& \quad \left. \sin[\alpha]^2 \sin[t \omega]^2 \right) \tan[\alpha] \Bigg) / \\
& \left(4 \sqrt{M0^2 (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega])} \right. \\
& \quad \left. \sin[\alpha]^2 \sin[t \omega]^2 \right) \\
& \sqrt{\left(\frac{1}{1 + \cos[2 \alpha]} (-2 + 4 M0 - 2 \cos[2 \alpha] - 2 M0 \cos[2 t \omega] + M0 \cos[2 \alpha - 2 t \omega] + \right.} \\
& \quad \left. M0 \cos[2 \alpha + 2 t \omega] + 2 \sqrt{2} \sqrt{M0^2 (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \right.} \\
& \quad \left. \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega]^2 \right) \Bigg) \Bigg) \Bigg) \\
v22[\alpha_, \omega_, t_, M0_, s_, r_, \theta_] := i \left(\frac{1}{M0} \sec[\alpha]^2 (\cos[\alpha + t \omega]^2 + \sin[t \omega]^2) \right. \\
& \left(s \left(\left(i \cos[\alpha] \cot[\alpha] \csc[t \omega]^2 (-4 M0 + 2 M0 \cos[2 t \omega] - M0 \cos[2 \alpha - 2 t \omega] - M0 \right. \right. \right. \\
& \quad \left. \left. \cos[2 \alpha + 2 t \omega] + 2 M0 \cos[\alpha - t \omega]^2 \sec[\alpha]^2 + 2 M0 \cos[2 \alpha] \cos[\alpha - t \omega]^2 \right. \right. \\
& \quad \left. \left. \sec[\alpha]^2 + 2 M0 \sec[\alpha]^2 \sin[t \omega]^2 + 2 M0 \cos[2 \alpha] \sec[\alpha]^2 \sin[t \omega]^2 + 2 \sqrt{2} \right. \right. \\
& \quad \left. \left. \sqrt{-M0^2 (-6 - 2 \cos[2 \alpha] + 2 \cos[2 t \omega] - \cos[2 \alpha - 2 t \omega] - \cos[2 \alpha + 2 t \omega])} \right. \right. \\
& \quad \left. \left. \sin[\alpha]^2 \sin[t \omega]^2 \right) \sqrt{\left(\frac{1}{1 + \cos[2 \alpha]} (-2 + 4 M0 - 2 \cos[2 \alpha] - 2 M0 \cos[2 t \omega] + \right.} \right. \\
& \quad \left. \left. M0 \cos[2 \alpha - 2 t \omega] + M0 \cos[2 \alpha + 2 t \omega] - 2 \sqrt{2} \sqrt{M0^2 (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \right.} \right. \\
& \quad \left. \left. \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega]^2 \right) \right) \Bigg) \Bigg)
\end{aligned}$$

$$\begin{aligned}
& \omega] + M0 \cos[2\alpha - 2t\omega] + M0 \cos[2\alpha + 2t\omega] - 2\sqrt{2} \sqrt{M0^2 (6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2} \Big) \Big) \\
& \Big(4M0 - 2M0 \cos[2t\omega] + M0 \cos[2\alpha - 2t\omega] + M0 \cos[2\alpha + 2t\omega] - 2M0 \\
& \cos[\alpha - t\omega]^2 \sec[\alpha]^2 - 2M0 \cos[2\alpha] \cos[\alpha - t\omega]^2 \sec[\alpha]^2 - 2M0 \sec[\alpha]^2 \\
& \sin[t\omega]^2 - 2M0 \cos[2\alpha] \sec[\alpha]^2 \sin[t\omega]^2 + 2\sqrt{2} \sqrt{M0^2 (6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2} \Big) \Big) \Big) / \\
& \Big(32M0 (1 + \cos[2\alpha]) \sqrt{M0^2 (6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2} \Big) - \\
& \Big(i \cos[\alpha] \cot[\alpha] \csc[t\omega]^2 \Big(4M0 - 2M0 \cos[2t\omega] + M0 \cos[2\alpha - 2t\omega] + M0 \\
& \cos[2\alpha + 2t\omega] - 2M0 \cos[\alpha - t\omega]^2 \sec[\alpha]^2 - 2M0 \cos[2\alpha] \\
& \cos[\alpha - t\omega]^2 \sec[\alpha]^2 - 2M0 \sec[\alpha]^2 \sin[t\omega]^2 - 2M0 \cos[2\alpha] \\
& \sec[\alpha]^2 \sin[t\omega]^2 + 2\sqrt{2} \sqrt{-M0^2 (-6 - 2\cos[2\alpha] + 2\cos[2t\omega] - \cos[2\alpha - 2t\omega] - \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2} \Big) \Big) \\
& \sqrt{\Big(\frac{1}{1 + \cos[2\alpha]} \Big(-2 + 4M0 - 2\cos[2\alpha] - 2M0 \cos[2t\omega] + M0 \cos[2\alpha - 2t\omega] + \\
& M0 \cos[2\alpha + 2t\omega] + 2\sqrt{2} \sqrt{M0^2 (6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2} \Big) \Big) \Big) \\
& \Big(-4M0 + 2M0 \cos[2t\omega] - M0 \cos[2\alpha - 2t\omega] - M0 \cos[2\alpha + 2t\omega] + 2M0 \\
& \cos[\alpha - t\omega]^2 \sec[\alpha]^2 + 2M0 \cos[2\alpha] \cos[\alpha - t\omega]^2 \sec[\alpha]^2 + 2M0 \sec[\alpha]^2 \\
& \sin[t\omega]^2 + 2M0 \cos[2\alpha] \sec[\alpha]^2 \sin[t\omega]^2 + 2\sqrt{2} \sqrt{M0^2 (6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2} \Big) \Big) \Big) / \\
& \Big(32M0 (1 + \cos[2\alpha]) \sqrt{M0^2 (6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2} \Big) - \\
& \Big(- \Big(\sqrt{\Big(\frac{1}{1 + \cos[2\alpha]} \Big(-2 + 4M0 - 2\cos[2\alpha] - 2M0 \cos[2t\omega] + M0 \cos[2\alpha - 2t\omega] + \\
& M0 \cos[2\alpha + 2t\omega] - 2\sqrt{2} \sqrt{M0^2 (6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2} \Big) \Big) \Big) \\
& \Big(4M0 - 2M0 \cos[2t\omega] + M0 \cos[2\alpha - 2t\omega] + M0 \cos[2\alpha + 2t\omega] - \\
& 2M0 \cos[\alpha - t\omega]^2 \sec[\alpha]^2 - 2M0 \cos[2\alpha] \cos[\alpha - t\omega]^2 \sec[\alpha]^2 - \\
& 2M0 \sec[\alpha]^2 \sin[t\omega]^2 - 2M0 \cos[2\alpha] \sec[\alpha]^2 \sin[t\omega]^2 + \\
& 2\sqrt{2} \sqrt{M0^2 (6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2} \Big) \Big) \Big(2M0^2 \omega \cos[t\omega] (6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \\
& \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega] + M0^2 \sin[\alpha]^2 \\
& \sin[t\omega]^2 (4\omega \sin[2t\omega] + 2\omega \sin[2\alpha - 2t\omega] - 2\omega \sin[2\alpha + 2t\omega]) \Big) \Big) \Big) / \\
& \Big(16 (M0^2 (6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2) \Big)
\end{aligned}$$

$$\begin{aligned}
& \left. \sin[\alpha]^2 \sin[t \omega]^2)^{3/2} \right) - \\
& \left(\sqrt{\left(\frac{1}{1 + \cos[2 \alpha]} \left(-2 + 4 M0 - 2 \cos[2 \alpha] - 2 M0 \cos[2 t \omega] + M0 \cos[2 \alpha - 2 t \omega] + \right. \right. \right. \\
& \quad M0 \cos[2 \alpha + 2 t \omega] + 2 \sqrt{2} \sqrt{M0^2 (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \\
& \quad \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega]^2} \right) \right)} \\
& \quad (-4 M0 + 2 M0 \cos[2 t \omega] - M0 \cos[2 \alpha - 2 t \omega] - M0 \cos[2 \alpha + 2 t \omega] + 2 M0 \\
& \quad \cos[\alpha - t \omega]^2 \sec[\alpha]^2 + 2 M0 \cos[2 \alpha] \cos[\alpha - t \omega]^2 \sec[\alpha]^2 + 2 M0 \sec[\alpha]^2 \\
& \quad \sin[t \omega]^2 + 2 M0 \cos[2 \alpha] \sec[\alpha]^2 \sin[t \omega]^2 + 2 \sqrt{2} \sqrt{M0^2 (6 + 2 \cos[2 \alpha] - \\
& \quad 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega]^2} \\
& \quad (2 M0^2 \omega \cos[t \omega] (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \\
& \quad \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega] + M0^2 \sin[\alpha]^2 \sin[t \omega]^2 \\
& \quad (4 \omega \sin[2 t \omega] + 2 \omega \sin[2 \alpha - 2 t \omega] - 2 \omega \sin[2 \alpha + 2 t \omega])) \Big) / \\
& \quad (16 (M0^2 (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega]) \\
& \quad \sin[\alpha]^2 \sin[t \omega]^2)^{3/2}) + \\
& \quad (4 M0 - 2 M0 \cos[2 t \omega] + M0 \cos[2 \alpha - 2 t \omega] + M0 \cos[2 \alpha + 2 t \omega] - 2 M0 \\
& \quad \cos[\alpha - t \omega]^2 \sec[\alpha]^2 - 2 M0 \cos[2 \alpha] \cos[\alpha - t \omega]^2 \sec[\alpha]^2 - 2 M0 \sec[\alpha]^2 \\
& \quad \sin[t \omega]^2 - 2 M0 \cos[2 \alpha] \sec[\alpha]^2 \sin[t \omega]^2 + 2 \sqrt{2} \sqrt{M0^2 (6 + 2 \cos[2 \alpha] - \\
& \quad 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega]^2} \\
& \quad (4 M0 \omega \sin[2 t \omega] + 2 M0 \omega \sin[2 \alpha - 2 t \omega] - 2 M0 \omega \sin[2 \alpha + 2 t \omega] - \\
& \quad (\sqrt{2} (2 M0^2 \omega \cos[t \omega] (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega] + M0^2 \sin[\alpha]^2 \sin[t \omega]^2 (4 \omega \sin[2 t \omega] + \\
& \quad 2 \omega \sin[2 \alpha - 2 t \omega] - 2 \omega \sin[2 \alpha + 2 t \omega])) \Big) / (\sqrt{M0^2 (6 + 2 \cos[2 \alpha] - \\
& \quad 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega]^2} \Big) \Big) / \\
& \quad (16 (1 + \cos[2 \alpha]) \sqrt{M0^2 (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \\
& \quad \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega]^2} \\
& \quad \sqrt{\left(\frac{1}{1 + \cos[2 \alpha]} \left(-2 + 4 M0 - 2 \cos[2 \alpha] - 2 M0 \cos[2 t \omega] + M0 \cos[2 \alpha - 2 t \omega] + \right. \right. \\
& \quad M0 \cos[2 \alpha + 2 t \omega] - 2 \sqrt{2} \sqrt{M0^2 (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \\
& \quad \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega]^2} \right) \Big) \Big) + \\
& \quad ((-4 M0 + 2 M0 \cos[2 t \omega] - M0 \cos[2 \alpha - 2 t \omega] - M0 \cos[2 \alpha + 2 t \omega] + 2 M0 \\
& \quad \cos[\alpha - t \omega]^2 \sec[\alpha]^2 + 2 M0 \cos[2 \alpha] \cos[\alpha - t \omega]^2 \sec[\alpha]^2 + 2 M0 \sec[\alpha]^2 \\
& \quad \sin[t \omega]^2 + 2 M0 \cos[2 \alpha] \sec[\alpha]^2 \sin[t \omega]^2 + 2 \sqrt{2} \sqrt{M0^2 (6 + 2 \cos[2 \alpha] - \\
& \quad 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega]^2} \\
& \quad (4 M0 \omega \sin[2 t \omega] + 2 M0 \omega \sin[2 \alpha - 2 t \omega] - 2 M0 \omega \sin[2 \alpha + 2 t \omega] + \\
& \quad (\sqrt{2} (2 M0^2 \omega \cos[t \omega] (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \\
& \quad \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega] + M0^2 \sin[\alpha]^2 \sin[t \omega]^2) \Big)
\end{aligned}$$

$$\begin{aligned}
& \left. \sin[\alpha]^2 \sin[t \omega]^2 \right) \Big) - \\
& s \left(- \left(\left(i M0 (1 + \cos[2 \alpha]) \sec[\alpha] \sin[t \omega]^2 \sqrt{\left(\frac{1}{1 + \cos[2 \alpha]} (-2 + 4 M0 - \right. \right. \right. \right. \right. \\
& \quad 2 \cos[2 \alpha] - 2 M0 \cos[2 t \omega] + M0 \cos[2 \alpha - 2 t \omega] + M0 \cos[2 \alpha + 2 t \omega] - \\
& \quad 2 \sqrt{2} \sqrt{M0^2 (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \\
& \quad \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega]^2} \Big) \tan[\alpha] \Big) \Big) / \\
& \quad (2 \sqrt{M0^2 (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega])} \\
& \quad \sin[\alpha]^2 \sin[t \omega]^2) \Big) + \left(i M0 (1 + \cos[2 \alpha]) \sec[\alpha] \sin[t \omega]^2 \right. \\
& \quad \sqrt{\left(\frac{1}{1 + \cos[2 \alpha]} (-2 + 4 M0 - 2 \cos[2 \alpha] - 2 M0 \cos[2 t \omega] + M0 \cos[2 \alpha - 2 t \omega] + \right. \\
& \quad M0 \cos[2 \alpha + 2 t \omega] + 2 \sqrt{2} \sqrt{M0^2 (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \\
& \quad \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega]^2} \Big) \tan[\alpha] \Big) \Big) / \\
& \quad (2 \sqrt{M0^2 (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega])} \\
& \quad \sin[\alpha]^2 \sin[t \omega]^2) \Big) \Big) + \frac{1}{M0} 2 i \sec[\alpha] \sin[t \omega]^2 \tan[\alpha] \\
& \left(s \left(\left((-4 M0 + 2 M0 \cos[2 t \omega] - M0 \cos[2 \alpha - 2 t \omega] - M0 \cos[2 \alpha + 2 t \omega] + 2 M0 \right. \right. \right. \\
& \quad \cos[\alpha - t \omega]^2 \sec[\alpha]^2 + 2 M0 \cos[2 \alpha] \cos[\alpha - t \omega]^2 \sec[\alpha]^2 + 2 M0 \sec[\alpha]^2 \\
& \quad \sin[t \omega]^2 + 2 M0 \cos[2 \alpha] \sec[\alpha]^2 \sin[t \omega]^2 + 2 \sqrt{2} \sqrt{-M0^2 (-6 - 2 \cos[2 \alpha] + \\
& \quad 2 \cos[2 t \omega] - \cos[2 \alpha - 2 t \omega] - \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega]^2} \Big) \Big) \\
& \quad \sqrt{\left(\frac{1}{1 + \cos[2 \alpha]} (-2 + 4 M0 - 2 \cos[2 \alpha] - 2 M0 \cos[2 t \omega] + M0 \cos[2 \alpha - 2 t \omega] + \right. \\
& \quad M0 \cos[2 \alpha + 2 t \omega] - 2 \sqrt{2} \sqrt{M0^2 (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \\
& \quad \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega]^2} \Big) \Big) \Big) / \\
& \quad (8 \sqrt{M0^2 (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega])} \\
& \quad \sin[\alpha]^2 \sin[t \omega]^2) \Big) + \\
& \left((4 M0 - 2 M0 \cos[2 t \omega] + M0 \cos[2 \alpha - 2 t \omega] + M0 \cos[2 \alpha + 2 t \omega] - 2 M0 \right. \\
& \quad \cos[\alpha - t \omega]^2 \sec[\alpha]^2 - 2 M0 \cos[2 \alpha] \cos[\alpha - t \omega]^2 \sec[\alpha]^2 - 2 M0 \sec[\alpha]^2 \\
& \quad \sin[t \omega]^2 - 2 M0 \cos[2 \alpha] \sec[\alpha]^2 \sin[t \omega]^2 + 2 \sqrt{2} \sqrt{-M0^2 (-6 - 2 \cos[2 \alpha] + \\
& \quad 2 \cos[2 t \omega] - \cos[2 \alpha - 2 t \omega] - \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega]^2} \Big) \Big) \\
& \quad \sqrt{\left(\frac{1}{1 + \cos[2 \alpha]} (-2 + 4 M0 - 2 \cos[2 \alpha] - 2 M0 \cos[2 t \omega] + M0 \cos[2 \alpha - 2 t \omega] + \right. \\
& \quad M0 \cos[2 \alpha + 2 t \omega] + 2 \sqrt{2} \sqrt{M0^2 (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \\
& \quad \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega]^2} \Big) \Big) \Big) / \\
& \quad (8 \sqrt{M0^2 (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega])}
\end{aligned}$$

$$\begin{aligned}
& \left. \sin[\alpha]^2 \sin[t \omega]^2 \right) \Big) - \\
& s \left(\left(\sqrt{\left(\frac{1}{1 + \cos[2 \alpha]} \left(-2 + 4 M \theta - 2 \cos[2 \alpha] - 2 M \theta \cos[2 t \omega] + M \theta \cos[2 \alpha - 2 t \omega] + \right. \right. \right. \right. \\
& \quad M \theta \cos[2 \alpha + 2 t \omega] - 2 \sqrt{2} \sqrt{M \theta^2 (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega])} \sin[\alpha]^2 \sin[t \omega]^2 \Big) \Big) \right. \\
& \quad \left(4 M \theta - 2 M \theta \cos[2 t \omega] + M \theta \cos[2 \alpha - 2 t \omega] + M \theta \cos[2 \alpha + 2 t \omega] - 2 M \theta \cos[\alpha - t \omega]^2 \sec[\alpha]^2 - 2 M \theta \cos[2 \alpha] \cos[\alpha - t \omega]^2 \sec[\alpha]^2 - 2 M \theta \sec[\alpha]^2 \sin[t \omega]^2 - 2 M \theta \cos[2 \alpha] \sec[\alpha]^2 \sin[t \omega]^2 + 2 \sqrt{2} \sqrt{M \theta^2 (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega])} \sin[\alpha]^2 \sin[t \omega]^2 \Big) \right) \Big) \Big) / \\
& \quad \left(8 \sqrt{M \theta^2 (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega])} \sin[\alpha]^2 \sin[t \omega]^2 \Big) + \right. \\
& \quad \left(\sqrt{\left(\frac{1}{1 + \cos[2 \alpha]} \left(-2 + 4 M \theta - 2 \cos[2 \alpha] - 2 M \theta \cos[2 t \omega] + M \theta \cos[2 \alpha - 2 t \omega] + \right. \right. \right. \right. \\
& \quad M \theta \cos[2 \alpha + 2 t \omega] + 2 \sqrt{2} \sqrt{M \theta^2 (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega])} \sin[\alpha]^2 \sin[t \omega]^2 \Big) \Big) \right. \\
& \quad \left(-4 M \theta + 2 M \theta \cos[2 t \omega] - M \theta \cos[2 \alpha - 2 t \omega] - M \theta \cos[2 \alpha + 2 t \omega] + 2 M \theta \cos[\alpha - t \omega]^2 \sec[\alpha]^2 + 2 M \theta \cos[2 \alpha] \cos[\alpha - t \omega]^2 \sec[\alpha]^2 + 2 M \theta \sec[\alpha]^2 \sin[t \omega]^2 + 2 M \theta \cos[2 \alpha] \sec[\alpha]^2 \sin[t \omega]^2 + 2 \sqrt{2} \sqrt{M \theta^2 (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega])} \sin[\alpha]^2 \sin[t \omega]^2 \Big) \right) \Big) \Big) / \\
& \quad \left(8 \sqrt{M \theta^2 (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega])} \sin[\alpha]^2 \sin[t \omega]^2 \Big) \right) + \\
& e^{-i \theta} r \left(- \left(\left(i M \theta (1 + \cos[2 \alpha]) \sec[\alpha] \sin[t \omega]^2 \sqrt{\left(\frac{1}{1 + \cos[2 \alpha]} \left(-2 + 4 M \theta - 2 \cos[2 \alpha] - 2 M \theta \cos[2 t \omega] + M \theta \cos[2 \alpha - 2 t \omega] + M \theta \cos[2 \alpha + 2 t \omega] - 2 \sqrt{2} \sqrt{M \theta^2 (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega])} \sin[\alpha]^2 \sin[t \omega]^2 \right) \right) \tan[\alpha] \right) \right. \right. \\
& \quad \left(2 \sqrt{M \theta^2 (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega])} \sin[\alpha]^2 \sin[t \omega]^2 \right) \Big) + \left(i M \theta (1 + \cos[2 \alpha]) \sec[\alpha] \sin[t \omega]^2 \right. \\
& \quad \left. \sqrt{\left(\frac{1}{1 + \cos[2 \alpha]} \left(-2 + 4 M \theta - 2 \cos[2 \alpha] - 2 M \theta \cos[2 t \omega] + M \theta \cos[2 \alpha - 2 t \omega] + \right. \right. \right. \right. \\
& \quad M \theta \cos[2 \alpha + 2 t \omega] + 2 \sqrt{2} \sqrt{M \theta^2 (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega])} \sin[\alpha]^2 \sin[t \omega]^2 \Big) \Big) \tan[\alpha] \Big) \Big) / \\
& \quad \left(2 \sqrt{M \theta^2 (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega])} \sin[\alpha]^2 \sin[t \omega]^2 \right)
\end{aligned}$$

$$\begin{aligned}
& \left. \sin[\alpha]^2 \sin[t \omega]^2) \right) \Bigg) - \\
& e^{i \theta} r \left(- \left(\left(i M \theta (1 + \cos[2 \alpha]) \sec[\alpha] \sin[t \omega]^2 \sqrt{\left(\frac{1}{1 + \cos[2 \alpha]} (-2 + 4 M \theta - \right. \right. \right. \right. \\
& \quad 2 \cos[2 \alpha] - 2 M \theta \cos[2 t \omega] + M \theta \cos[2 \alpha - 2 t \omega] + M \theta \cos[2 \alpha + 2 t \omega] - \\
& \quad 2 \sqrt{2} \sqrt{M \theta^2 (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \\
& \quad \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega]^2) \Bigg) \tan[\alpha] \Bigg) / \\
& \quad (2 \sqrt{M \theta^2 (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega])} \\
& \quad \sin[\alpha]^2 \sin[t \omega]^2) \Bigg) + \left(i M \theta (1 + \cos[2 \alpha]) \sec[\alpha] \sin[t \omega]^2 \right. \\
& \quad \sqrt{\left(\frac{1}{1 + \cos[2 \alpha]} (-2 + 4 M \theta - 2 \cos[2 \alpha] - 2 M \theta \cos[2 t \omega] + M \theta \cos[2 \alpha - 2 t \omega] + \right. \\
& \quad M \theta \cos[2 \alpha + 2 t \omega] + 2 \sqrt{2} \sqrt{M \theta^2 (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \\
& \quad \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega]^2) \Bigg) \tan[\alpha] \Bigg) / \\
& \quad (2 \sqrt{M \theta^2 (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega])} \\
& \quad \sin[\alpha]^2 \sin[t \omega]^2) \Bigg) \Bigg) - \\
& i \left(- \left(\left(i M \theta \omega (1 + \cos[2 \alpha]) \cos[t \omega] \sec[\alpha] \sin[t \omega] \sqrt{\left(\frac{1}{1 + \cos[2 \alpha]} \right. \right. \right. \right. \\
& \quad (-2 + 4 M \theta - 2 \cos[2 \alpha] - 2 M \theta \cos[2 t \omega] + M \theta \cos[2 \alpha - 2 t \omega] + \\
& \quad M \theta \cos[2 \alpha + 2 t \omega] - 2 \sqrt{2} \sqrt{M \theta^2 (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \\
& \quad \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega]^2) \Bigg) \tan[\alpha] \Bigg) / \\
& \quad (\sqrt{M \theta^2 (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega])} \\
& \quad \sin[\alpha]^2 \sin[t \omega]^2) \Bigg) + \\
& \quad \left(i M \theta \omega (1 + \cos[2 \alpha]) \cos[t \omega] \sec[\alpha] \sin[t \omega] \sqrt{\left(\frac{1}{1 + \cos[2 \alpha]} \right. \right. \right. \\
& \quad (-2 + 4 M \theta - 2 \cos[2 \alpha] - 2 M \theta \cos[2 t \omega] + M \theta \cos[2 \alpha - 2 t \omega] + \\
& \quad M \theta \cos[2 \alpha + 2 t \omega] + 2 \sqrt{2} \sqrt{M \theta^2 (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \\
& \quad \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega]^2) \Bigg) \tan[\alpha] \Bigg) / \\
& \quad (\sqrt{M \theta^2 (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega])} \\
& \quad \sin[\alpha]^2 \sin[t \omega]^2) \Bigg) + \left(i M \theta (1 + \cos[2 \alpha]) \sec[\alpha] \sin[t \omega]^2 \right. \\
& \quad \sqrt{\left(\frac{1}{1 + \cos[2 \alpha]} (-2 + 4 M \theta - 2 \cos[2 \alpha] - 2 M \theta \cos[2 t \omega] + M \theta \cos[2 \alpha - 2 t \omega] + \right. \\
& \quad M \theta \cos[2 \alpha + 2 t \omega] - 2 \sqrt{2} \sqrt{M \theta^2 (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \\
& \quad \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega]^2) \Bigg) \Bigg)
\end{aligned}$$

$$\begin{aligned}
& \left(2 M \theta^2 \omega \cos[t \omega] (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \right. \\
& \quad \left. \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega] + M \theta^2 \sin[\alpha]^2 \sin[t \omega]^2 \right. \\
& \quad \left. (4 \omega \sin[2 t \omega] + 2 \omega \sin[2 \alpha - 2 t \omega] - 2 \omega \sin[2 \alpha + 2 t \omega]) \tan[\alpha] \right) / \\
& \left(4 (M \theta^2 (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega]) \right. \\
& \quad \left. \sin[\alpha]^2 \sin[t \omega]^2)^{3/2} \right) - \left(i M \theta (1 + \cos[2 \alpha]) \sec[\alpha] \sin[t \omega]^2 \right. \\
& \quad \left. \sqrt{\left(\frac{1}{1 + \cos[2 \alpha]} (-2 + 4 M \theta - 2 \cos[2 \alpha] - 2 M \theta \cos[2 t \omega] + M \theta \cos[2 \alpha - 2 t \omega] + \right. \right. \\
& \quad \left. \left. M \theta \cos[2 \alpha + 2 t \omega] + 2 \sqrt{2} \sqrt{(M \theta^2 (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \right. \right. \right. \\
& \quad \left. \left. \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega]^2)} \right) \right) \\
& \quad \left(2 M \theta^2 \omega \cos[t \omega] (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \right. \\
& \quad \left. \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega] + M \theta^2 \sin[\alpha]^2 \sin[t \omega]^2 \right. \\
& \quad \left. (4 \omega \sin[2 t \omega] + 2 \omega \sin[2 \alpha - 2 t \omega] - 2 \omega \sin[2 \alpha + 2 t \omega]) \tan[\alpha] \right) / \\
& \left(4 (M \theta^2 (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega]) \right. \\
& \quad \left. \sin[\alpha]^2 \sin[t \omega]^2)^{3/2} \right) - \\
& \left(i M \theta \sec[\alpha] \sin[t \omega]^2 (4 M \theta \omega \sin[2 t \omega] + 2 M \theta \omega \sin[2 \alpha - 2 t \omega] - 2 M \theta \omega \right. \\
& \quad \left. \sin[2 \alpha + 2 t \omega] - (\sqrt{2} (2 M \theta^2 \omega \cos[t \omega] (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \right. \\
& \quad \left. \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega] + M \theta^2 \sin[\alpha]^2 \right. \\
& \quad \left. \sin[t \omega]^2 (4 \omega \sin[2 t \omega] + 2 \omega \sin[2 \alpha - 2 t \omega] - 2 \omega \sin[2 \alpha + 2 t \omega]) \right)) / \\
& \quad \left(\sqrt{(M \theta^2 (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega]) \right. \\
& \quad \left. \sin[\alpha]^2 \sin[t \omega]^2)} \right) \tan[\alpha] \Big) / \\
& \left(4 \sqrt{(M \theta^2 (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega]) \right. \\
& \quad \left. \sin[\alpha]^2 \sin[t \omega]^2)} \sqrt{\left(\frac{1}{1 + \cos[2 \alpha]} (-2 + 4 M \theta - 2 \cos[2 \alpha] - 2 M \theta \cos[2 t \omega] + \right. \right. \\
& \quad \left. \left. M \theta \cos[2 \alpha - 2 t \omega] + M \theta \cos[2 \alpha + 2 t \omega] - 2 \sqrt{2} \sqrt{(M \theta^2 (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \right. \right. \right. \\
& \quad \left. \left. \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega]^2)} \right) \right) \Big) + \\
& \left(i M \theta \sec[\alpha] \sin[t \omega]^2 (4 M \theta \omega \sin[2 t \omega] + 2 M \theta \omega \sin[2 \alpha - 2 t \omega] - 2 M \theta \omega \right. \\
& \quad \left. \sin[2 \alpha + 2 t \omega] + (\sqrt{2} (2 M \theta^2 \omega \cos[t \omega] (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \right. \\
& \quad \left. \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega] + M \theta^2 \sin[\alpha]^2 \right. \\
& \quad \left. \sin[t \omega]^2 (4 \omega \sin[2 t \omega] + 2 \omega \sin[2 \alpha - 2 t \omega] - 2 \omega \sin[2 \alpha + 2 t \omega]) \right)) / \\
& \quad \left(\sqrt{(M \theta^2 (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega]) \right. \\
& \quad \left. \sin[\alpha]^2 \sin[t \omega]^2)} \right) \tan[\alpha] \Big) / \\
& \left(4 \sqrt{(M \theta^2 (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega]) \right. \\
& \quad \left. \sin[\alpha]^2 \sin[t \omega]^2)} \right)
\end{aligned}$$

$$\sqrt{\left(\frac{1}{1 + \cos[2\alpha]} \left(-2 + 4 M\theta - 2 \cos[2\alpha] - 2 M\theta \cos[2 t \omega] + M\theta \cos[2\alpha - 2 t \omega] + M\theta \cos[2\alpha + 2 t \omega] + 2 \sqrt{2} \sqrt{M\theta^2 (6 + 2 \cos[2\alpha] - 2 \cos[2 t \omega] + \cos[2\alpha - 2 t \omega] + \cos[2\alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega]^2}\right)\right)\right)\right)\right)\right)$$

```

vMatrix[α_, ω_, t_, Mθ_, s_, r_, θ_] := {{v11[α, ω, t, Mθ, s, r, θ],
      v12[α, ω, t, Mθ, s, r, θ]}, {v21[α, ω, t, Mθ, s, r, θ], v22[α, ω, t, Mθ, s, r, θ]}}
Unit = {{1, 0}, {0, 1}}
σy = {{0, -I}, {I, 0}}

```

```
Out[33]= {{1, 0}, {0, 1}}
```

```
Out[34]= {{0, -I}, {I, 0}}
```

```

In[35]:= Htotal[α_, ω_, t_, Mθ_, s_, r_, θ_] := KroneckerProduct[Unit, Σ[α, ω, t, Mθ, s, r, θ]] +
      KroneckerProduct[σy, vMatrix[α, ω, t, Mθ, s, r, θ]]

```

```
In[36]:=
```

```
In[37]:= ArcSin[Sec[2 * π/3] - Tan[2 * π/3]]
```

```
Out[37]= -ArcSin[2 - √3]
```

```
In[38]:=
```

```
In[39]:=
```

```
In[40]:= M0 = 1.733
```

```
r = 1
```

```
s = 1
```

```
θ = -ArcSin[2 - √3]
```

```
σ = 2 π / 3
```

```
ω = √[s² - r² Sin[θ]²]
```

```
α = ArcSin[(r / s) * Sin[θ]]
```

```
τPerp = N[
$$\frac{\text{ArcSin}\left[\sqrt{\frac{\text{Cos}[\alpha]^2 \text{Cos}[\sigma]}{2 \text{Sin}[\alpha] - 2 \text{Cos}[\sigma] \text{Sin}[\alpha]^2}}\right]}{\omega}$$
]
```

```
Out[40]= 1.733
```

```
Out[41]= 1
```

```
Out[42]= 1
```

```
Out[43]= -ArcSin[2 - √3]
```

```
Out[44]=  $\frac{2 \pi}{3}$ 
```

```
Out[45]=  $\sqrt{1 - (-2 + \sqrt{3})^2}$ 
```

```
Out[46]= -ArcSin[2 - √3]
```

```
Out[47]= 1.63042
```

```
In[48]:= Min[Table[Eigenvalues[MMatrix[α, ω, (k/1000) * τPerp, M0]], {k, 1, 1000}]]
```

```
Out[48]= 1.00055
```





```
In[49]:=
```

```
In[50]:=
```

```
In[51]:= Eqn1[t_] := Transpose[
  -I * Htotal[α, ω, t, M0, s, r, θ].Transpose[{{ψ1[t], ψ2[t], ψ3[t], ψ4[t]}}][[1]][[1]]
Eqn2[t_] := Transpose[-I * Htotal[α, ω, t, M0, s, r, θ].
  Transpose[{{ψ1[t], ψ2[t], ψ3[t], ψ4[t]}}][[1]][[2]]
Eqn3[t_] := Transpose[-I * Htotal[α, ω, t, M0, s, r, θ].
  Transpose[{{ψ1[t], ψ2[t], ψ3[t], ψ4[t]}}][[1]][[3]]
Eqn4[t_] := Transpose[-I * Htotal[α, ω, t, M0, s, r, θ].
  Transpose[{{ψ1[t], ψ2[t], ψ3[t], ψ4[t]}}][[1]][[4]]
```

```
In[55]:= Needs["DifferentialEquations`NDSolveProblems`"];
Needs["DifferentialEquations`NDSolveUtilities`"];
```

```
In[57]:= y1 = NDSolve[{ψ1'[t] == Eqn1[t], ψ2'[t] == Eqn2[t], ψ3'[t] == Eqn3[t],
  ψ4'[t] == Eqn4[t], ψ1[10-12] == 1, ψ2[10-12] == 0, ψ3[10-12] == 0, ψ4[10-12] == 0},
  {ψ1, ψ2, ψ3, ψ4}, {t, 10-12, τPerp + 0.1}, MaxSteps → 2 * 106, AccuracyGoal → Automatic,
  WorkingPrecision → MachinePrecision, Method → "ExplicitRungeKutta"]
```

```
Out[57]= { {ψ1 → InterpolatingFunction[ Domain: {{1. × 10-12, 1.73}} Output: scalar],
  ψ2 → InterpolatingFunction[ Domain: {{1. × 10-12, 1.73}} Output: scalar],
  ψ3 → InterpolatingFunction[ Domain: {{1. × 10-12, 1.73}} Output: scalar],
  ψ4 → InterpolatingFunction[ Domain: {{1. × 10-12, 1.73}} Output: scalar] ] }
```

```
In[58]:= OneOne = Evaluate[{ψ1[τPerp], ψ2[τPerp], ψ3[τPerp], ψ4[τPerp]} /. y1]
```

```
Out[58]= { { -6.34762 × 10-7 - 0.0973861 i, -0.872153 - 1.90788 × 10-7 i,
  -8.75372 × 10-7 - 0.438595 i, 0.193658 - 1.97455 × 10-7 i } }
```


```
In[59]:=
```


```
In[60]:=
```

```
In[61]:= y2 = NDSolve[{ψ1'[t] == Eqn1[t], ψ2'[t] == Eqn2[t], ψ3'[t] == Eqn3[t],
  ψ4'[t] == Eqn4[t], ψ1[10-12] == 0, ψ2[10-12] == 1, ψ3[10-12] == 0, ψ4[10-12] == 0},
  {ψ1, ψ2, ψ3, ψ4}, {t, 10-12, τPerp + 0.1}, MaxSteps → 2 * 108, AccuracyGoal → Automatic,
  PrecisionGoal → 50, WorkingPrecision → MachinePrecision, Method → "ExplicitRungeKutta"]
```


```
Out[61]= { {ψ1 → InterpolatingFunction[ Domain: {{1. × 10-12, 1.73}}
  Output: scalar } },
```

 Data not in notebook; Store now »

```
ψ2 → InterpolatingFunction[ Domain: {{1. × 10-12, 1.73}}
  Output: scalar } },
```

 Data not in notebook; Store now »

```
ψ3 → InterpolatingFunction[ Domain: {{1. × 10-12, 1.73}}
  Output: scalar } },
```

 Data not in notebook; Store now »

```
ψ4 → InterpolatingFunction[ Domain: {{1. × 10-12, 1.73}}
  Output: scalar ] ] }
```




 Data not in notebook; Store now »

```
In[62]:= OneTwo = Evaluate[{ψ1[τPerp], ψ2[τPerp], ψ3[τPerp], ψ4[τPerp]} /. y2]
```

```
Out[62]= { { -0.872144 - 6.97989 × 10-8 i, -3.44975 × 10-7 + 0.0973951 i,
  0.193669 - 5.60179 × 10-8 i, -5.27585 × 10-7 + 0.438606 i } }
```



```
In[63]:= y3 = NDSolve[{ψ1'[t] == Eqn1[t], ψ2'[t] == Eqn2[t], ψ3'[t] == Eqn3[t],
  ψ4'[t] == Eqn4[t], ψ1[10-12] == 0, ψ2[10-12] == 0, ψ3[10-12] == 1, ψ4[10-12] == 0},
  {ψ1, ψ2, ψ3, ψ4}, {t, 10-12, τPerp + 0.1}, MaxSteps → 2 * 106, AccuracyGoal → Automatic,
  PrecisionGoal → 50, WorkingPrecision → MachinePrecision, Method → "ExplicitRungeKutta"]
```


```
Out[63]= { {ψ1 → InterpolatingFunction[ Domain: {{1. × 10-12, 1.73}} Output: scalar],
  ψ2 → InterpolatingFunction[ Domain: {{1. × 10-12, 1.73}} Output: scalar],
  ψ3 → InterpolatingFunction[ Domain: {{1. × 10-12, 1.73}} Output: scalar],
  ψ4 → InterpolatingFunction[ Domain: {{1. × 10-12, 1.73}} Output: scalar] ] }
```


```
In[64]:= TwoOne = Evaluate[{ψ1[τPerp], ψ2[τPerp], ψ3[τPerp], ψ4[τPerp]} /. y3]
```


```
Out[64]= { { -4.61287 × 10-7 + 0.438657 i, -0.193721 - 5.80156 × 10-7 i,
  4.11858 × 10-7 - 0.0974387 i, -0.8721 + 4.74197 × 10-7 i } }
```

```
In[65]:= y4 = NDSolve[{ψ1'[t] == Eqn1[t], ψ2'[t] == Eqn2[t], ψ3'[t] == Eqn3[t],
  ψ4'[t] == Eqn4[t], ψ1[10-12] == 0, ψ2[10-12] == 0, ψ3[10-12] == 0, ψ4[10-12] == 1},
  {ψ1, ψ2, ψ3, ψ4}, {t, 10-12, τPerp + 0.1}, MaxSteps → 2 * 108, AccuracyGoal → Automatic,
  WorkingPrecision → MachinePrecision, Method → "ExplicitRungeKutta"]
```

```
Out[65]= { {ψ1 → InterpolatingFunction[ Domain: {{1. × 10-12, 1.73}}
  Output: scalar
  Data not in notebook; Store now »
  ],
```

```
ψ2 → InterpolatingFunction[ Domain: {{1. × 10-12, 1.73}}
  Output: scalar
  Data not in notebook; Store now »
  ],
```

```
ψ3 → InterpolatingFunction[ Domain: {{1. × 10-12, 1.73}}
  Output: scalar
  Data not in notebook; Store now »
  ],
```

```
ψ4 → InterpolatingFunction[ Domain: {{1. × 10-12, 1.73}}
  Output: scalar
  Data not in notebook; Store now »
  ] }
```

```
In[66]:= TwoTwo = Evaluate[{ψ1[τPerp], ψ2[τPerp], ψ3[τPerp], ψ4[τPerp]} /. y4]
```

```
Out[66]= {{-0.193699 - 2.40768 × 10-8 i, 3.2985 × 10-7 - 0.438635 i,
  -0.872119 - 1.28 × 10-9 i, -2.25667 × 10-7 + 0.0974204 i}}
```

```
In[67]:=
```

```
In[68]:= OneOneStart = KroneckerProduct[{ {1, 0} }, { {1, 0} }]
```

```
Out[68]= { {1, 0, 0, 0} }
```

```
In[69]:= OneTwoStart = KroneckerProduct[{ {1, 0} }, { {0, 1} }]
```

```
Out[69]= { {0, 1, 0, 0} }
```

```
In[70]:= TwoOneStart = KroneckerProduct[{ {0, 1} }, { {1, 0} }]
```

```
Out[70]= { {0, 0, 1, 0} }
```

```
In[71]:= TwoTwoStart = KroneckerProduct[{ {0, 1} }, { {0, 1} }]
```

```
Out[71]= { {0, 0, 0, 1} }
```

In[72]:= **U = Transpose[OneOne].OneOneStart + Transpose[OneTwo].OneTwoStart +
Transpose[TwoOne].TwoOneStart + Transpose[TwoTwo].TwoTwoStart**

Out[72]= $\left\{ \left\{ -6.34762 \times 10^{-7} - 0.0973861 i, -0.872144 - 6.97989 \times 10^{-8} i, \right. \right.$
 $-4.61287 \times 10^{-7} + 0.438657 i, -0.193699 - 2.40768 \times 10^{-8} i \left. \right\},$
 $\left\{ -0.872153 - 1.90788 \times 10^{-7} i, -3.44975 \times 10^{-7} + 0.0973951 i, -0.193721 - 5.80156 \times 10^{-7} i, \right.$
 $3.2985 \times 10^{-7} - 0.438635 i \left. \right\}, \left\{ -8.75372 \times 10^{-7} - 0.438595 i, 0.193669 - 5.60179 \times 10^{-8} i, \right.$
 $4.11858 \times 10^{-7} - 0.0974387 i, -0.872119 - 1.28 \times 10^{-9} i \left. \right\}, \left\{ 0.193658 - 1.97455 \times 10^{-7} i, \right.$
 $-5.27585 \times 10^{-7} + 0.438606 i, -0.8721 + 4.74197 \times 10^{-7} i, -2.25667 \times 10^{-7} + 0.0974204 i \left. \right\} \}$

In[73]:= **U.Transpose[OneTwoStart]**

Out[73]= $\left\{ \left\{ -0.872144 - 6.97989 \times 10^{-8} i \right\}, \left\{ -3.44975 \times 10^{-7} + 0.0973951 i \right\}, \right.$
 $\left. \left\{ 0.193669 - 5.60179 \times 10^{-8} i \right\}, \left\{ -5.27585 \times 10^{-7} + 0.438606 i \right\} \right\}$

In[74]:= **OneTwo**

Out[74]= $\left\{ \left\{ -0.872144 - 6.97989 \times 10^{-8} i, -3.44975 \times 10^{-7} + 0.0973951 i, \right. \right.$
 $\left. 0.193669 - 5.60179 \times 10^{-8} i, -5.27585 \times 10^{-7} + 0.438606 i \right\} \}$

In[75]:= **MatrixForm[U]**

Out[75]//MatrixForm=

$$\begin{pmatrix} -6.34762 \times 10^{-7} - 0.0973861 i & -0.872144 - 6.97989 \times 10^{-8} i & -4.61287 \times 10^{-7} + 0.438657 i & -0.1936 \\ -0.872153 - 1.90788 \times 10^{-7} i & -3.44975 \times 10^{-7} + 0.0973951 i & -0.193721 - 5.80156 \times 10^{-7} i & 3.2985 \\ -8.75372 \times 10^{-7} - 0.438595 i & 0.193669 - 5.60179 \times 10^{-8} i & 4.11858 \times 10^{-7} - 0.0974387 i & -0.87 \\ 0.193658 - 1.97455 \times 10^{-7} i & -5.27585 \times 10^{-7} + 0.438606 i & -0.8721 + 4.74197 \times 10^{-7} i & -2.2566 \end{pmatrix}$$

In[76]:= **MatrixForm[U.Conjugate[Transpose[U]]]**

Out[76]//MatrixForm=

$$\begin{pmatrix} 1.00006 + 0. i & 6.478 \times 10^{-7} - 0.0000618165 i & -8.2936 \times 10^{-6} - 9.90611 \times 10^{-8} i \\ 6.478 \times 10^{-7} + 0.0000618165 i & 1.00007 + 0. i & 4.64507 \times 10^{-7} + 6.29039 \times 10^{-6} i \\ -8.2936 \times 10^{-6} + 9.90611 \times 10^{-8} i & 4.64507 \times 10^{-7} - 6.29039 \times 10^{-6} i & 0.999959 + 0. i \\ 9.77482 \times 10^{-7} + 0.0000145292 i & 0.0000301807 - 5.55432 \times 10^{-7} i & -4.1837 \times 10^{-7} - 0.0000564049 i \end{pmatrix}$$

In[77]:=

In[78]:= **(*In ideal life, it has to be a unit matrix*)**

In[79]:=

In[80]:= **v1Ref = {{Cos[$\frac{1}{4}(\pi - 2\sigma)$], -i Sin[$\frac{1}{4}(\pi - 2\sigma)$]]}**

v2Ref = {{Cos[$\frac{1}{4}(\pi + 2\sigma)$], -i Sin[$\frac{1}{4}(\pi + 2\sigma)$]]}

Out[80]= $\left\{ \left\{ \frac{1 + \sqrt{3}}{2\sqrt{2}}, \frac{i(-1 + \sqrt{3})}{2\sqrt{2}} \right\} \right\}$

Out[81]= $\left\{ \left\{ -\frac{-1 + \sqrt{3}}{2\sqrt{2}}, -\frac{i(1 + \sqrt{3})}{2\sqrt{2}} \right\} \right\}$

In[82]:=

```

In[83]:=  $\theta_1 = 2 * \text{ArcTan}[(M_0 - 1)^{(1/2)}]$ 
          $\text{Rrot} = \text{MatrixExp}[-I * \theta_1 * \sigma_y / 2]$ 

Out[83]= 1.41611

Out[84]=  $\{\{0.759628 + 0. i, -0.650358 + 0. i\}, \{0.650358 + 0. i, 0.759628 + 0. i\}\}$ 

In[85]:=  $\text{Ancilla} = \text{N}[\text{Rrot}.\text{Transpose}[\{\{1, 0\}\}]]$ 

Out[85]=  $\{\{0.759628 + 0. i\}, \{0.650358 + 0. i\}\}$ 

In[86]:=  $\text{ArrayReshape}[\text{Ancilla}, \{2, 1\}]$ 

Out[86]=  $\{\{0.759628 + 0. i\}, \{0.650358 + 0. i\}\}$ 

In[87]:=  $\text{InitialFirst} = \text{ArrayReshape}[\text{KroneckerProduct}[\text{ArrayReshape}[\text{Ancilla}, \{2, 1\}], \text{v1Ref}], \{4\}]$ 

Out[87]=  $\{0.733744 + 0. i, 0. + 0.196606 i, 0.628198 + 0. i, 0. + 0.168325 i\}$ 

In[88]:=  $\text{InitialSecond} = \text{ArrayReshape}[\text{KroneckerProduct}[\text{ArrayReshape}[\text{Ancilla}, \{2, 1\}], \text{v2Ref}], \{4\}]$ 

Out[88]=  $\{-0.196606 + 0. i, 0. - 0.733744 i, -0.168325 + 0. i, 0. - 0.628198 i\}$ 

In[89]:=  $\text{U}.\text{Transpose}[\{\text{InitialFirst}\}]$ 

Out[89]=  $\{\{-7.37757 \times 10^{-7} + 0.000033663 i\}, \{-0.706947 - 5.16744 \times 10^{-7} i\},$ 
           $\{-3.72341 \times 10^{-7} - 0.49175 i\}, \{-0.508387 + 1.12968 \times 10^{-8} i\}\}$ 

In[90]:=  $\text{U}.\text{Transpose}[\{\text{InitialSecond}\}]$ 

Out[90]=  $\{\{1.36105 \times 10^{-7} + 0.706921 i\}, \{-8.05074 \times 10^{-6} + 1.81077 \times 10^{-7} i\},$ 
           $\{6.08704 \times 10^{-8} + 0.508392 i\}, \{0.491746 + 4.87877 \times 10^{-7} i\}\}$ 

In[91]:=  $\text{Output1} = \text{ArrayReshape}[\{(\text{U}.\text{Transpose}[\{\text{InitialFirst}\}])[[3]], (\text{U}.\text{Transpose}[\{\text{InitialFirst}\}])[[4]]\}, \{2\}]$ 

Out[91]=  $\{-3.72341 \times 10^{-7} - 0.49175 i, -0.508387 + 1.12968 \times 10^{-8} i\}$ 

In[92]:=  $\text{Output2} = \text{ArrayReshape}[\{(\text{U}.\text{Transpose}[\{\text{InitialSecond}\}])[[3]], (\text{U}.\text{Transpose}[\{\text{InitialSecond}\}])[[4]]\}, \{2\}]$ 

Out[92]=  $\{6.08704 \times 10^{-8} + 0.508392 i, 0.491746 + 4.87877 \times 10^{-7} i\}$ 

In[93]:=

 $a_{12} = \text{Abs}[\{\text{Output1}.\text{Transpose}[\text{Conjugate}[\{\text{Output2}\}]]\}]^2$ 

Out[93]=  $\{\{0.249999\}\}$ 

In[94]:= (*May be! It is a mixed state!*)

```

```

In[95]:= U
Out[95]=  $\left\{ \left\{ -6.34762 \times 10^{-7} - 0.0973861 i, -0.872144 - 6.97989 \times 10^{-8} i, \right. \right.$ 
 $\left. -4.61287 \times 10^{-7} + 0.438657 i, -0.193699 - 2.40768 \times 10^{-8} i \right\},$ 
 $\left\{ -0.872153 - 1.90788 \times 10^{-7} i, -3.44975 \times 10^{-7} + 0.0973951 i, -0.193721 - 5.80156 \times 10^{-7} i, \right.$ 
 $\left. 3.2985 \times 10^{-7} - 0.438635 i \right\}, \left\{ -8.75372 \times 10^{-7} - 0.438595 i, 0.193669 - 5.60179 \times 10^{-8} i, \right.$ 
 $\left. 4.11858 \times 10^{-7} - 0.0974387 i, -0.872119 - 1.28 \times 10^{-9} i \right\}, \left\{ 0.193658 - 1.97455 \times 10^{-7} i, \right.$ 
 $\left. -5.27585 \times 10^{-7} + 0.438606 i, -0.8721 + 4.74197 \times 10^{-7} i, -2.25667 \times 10^{-7} + 0.0974204 i \right\} \}$ 

In[96]:=
In[97]:=
In[98]:= Max[Abs[U.ConjugateTranspose[U] - {{1, 0, 0, 0}, {0, 1, 0, 0}, {0, 0, 1, 0}, {0, 0, 0, 1}}]]
Out[98]= 0.0000722275

In[99]:=
In[100]:=
In[101]:=
In[102]:= (1/2)^(1/2)
Out[102]=  $\frac{1}{\sqrt{2}}$ 

In[103]:=
In[104]:= AncillaAdjuster = {{1/sqrt(2), 1/sqrt(2)}, {1/sqrt(2), -1/sqrt(2)}}
Out[104]=  $\left\{ \left\{ \frac{1}{\sqrt{2}}, \frac{1}{\sqrt{2}} \right\}, \left\{ \frac{1}{\sqrt{2}}, -\frac{1}{\sqrt{2}} \right\} \right\}$ 

In[105]:=
In[106]:= AncillaAdjuster.Transpose[{{1, 0}}]
Out[106]=  $\left\{ \left\{ \frac{1}{\sqrt{2}} \right\}, \left\{ \frac{1}{\sqrt{2}} \right\} \right\}$ 

In[107]:= AncillaAdjuster.ConjugateTranspose[AncillaAdjuster]
Out[107]= {{1, 0}, {0, 1}}

In[108]:= Ancilla
Out[108]= {{0.759628 + 0. i}, {0.650358 + 0. i}}

In[109]:= AncillaAdjuster.Transpose[{{1, 0}}] - Ancilla
Out[109]= {{-0.0525208 + 0. i}, {0.0567485 + 0. i}}

```

```
In[110]:= Adjuster65 = {{-0.5686136473872213`, 0.8226047167412797` I},  
                        {-0.8226047167412797` I, 0.5686136473872213`}}
```

```
Out[110]= {{-0.568614, 0. + 0.822605 I}, {0. - 0.822605 I, 0.568614}}
```