

```

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])

```

$$\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] - 2M\theta\cos[\alpha - t\omega]^2 \sec[\alpha]^2 - \right. \\
& \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] - 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) \\
& \left. \right) / \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) - \\
& \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\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 \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) \\
& \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 \left. 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] + \right. \\
& \quad \left. \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2} \right) \\
& \left. \right) / \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) \\
& \left. \right) / \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{Zeta21}[\alpha_, \omega_, t_, M\theta_] := - \left( \left( iM\theta(1 + \cos[2\alpha]) \sec[\alpha] \sin[t\omega]^2 \right. \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) / \left( 2 \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) \Big)
\end{aligned}$$

$$\begin{aligned}
& + \left( i M0 (1 + \cos[2\alpha]) \sec[\alpha] \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 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. \left. \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]) \sin[\alpha]^2 \sin[t\omega]^2} \right) \\
\text{Zeta22}[\alpha_, \omega_, t_, M0_] := & \\
& \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 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. \left. \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 - \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 \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) \\
& \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]) \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[2t\omega] + M0 \cos[2\alpha - 2t\omega] + \right. \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} \left. \left. \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 \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[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2} \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]) \sin[\alpha]^2 \sin[t\omega]^2} \right) \\
\text{Matrix}[\alpha_, \omega_, t_, M0_] := & \{ \{ \text{Zeta11}[\alpha, \omega, t, M0], \text{Zeta12}[\alpha, \omega, t, M0] \}, \\
& \{ \text{Zeta21}[\alpha, \omega, t, M0], \text{Zeta22}[\alpha, \omega, t, M0] \} \} \\
\text{Hq11}[r_, s_, \theta_] := & r * \text{Exp}[I * \theta]
\end{aligned}$$

```

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]

```

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

$$\begin{aligned}
& \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 \sqrt{\left( \frac{1}{1 + \cos[2 \alpha]} (-2 + 4 M0 - 2 \cos[2 \alpha] - 2 M0 \cos[2 t \omega] + \right. \right. \\
& \quad 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 \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( 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 - \\
& \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} \right. \\
& \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( 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) \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) \Big) / \left( 32 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) \\
\text{DerivativeMatrix21}[\alpha_, \omega_, t_, M0_] := & - \left( \left( i M0 \omega (1 + \cos[2 \alpha]) \cos[t \omega] \sec[\alpha] \sin[t \omega] \right. \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] + \\
& \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] \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) \Big) \\
& + \left( i M0 \omega (1 + \cos[2 \alpha]) \cos[t \omega] \sec[\alpha] \sin[t \omega] \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] + \\
& \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] \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) \Big) + \\
& \left( i M0 (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 \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. \\
& \quad \left. \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) \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 \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. \\
& \quad \left. \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) \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) \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])\sin[\alpha]^2\sin[t\omega]^2} \right. \\
& \quad \left. \Bigg) \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) \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( \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. (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])\sin[\alpha]^2\sin[t\omega]^2} \right)
\end{aligned}$$

$$\begin{aligned}
& \left. \right) \left. \right) \tan[\alpha] \Big) / \\
& \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 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) \\
\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. \\
& 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)} \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 \right. \\
& \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) \\
& \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. \\
& \sin[\alpha]^2 \sin[t \omega] + M0^2 \sin[\alpha]^2 \sin[t \omega]^2 \\
& \left. \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( 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. \\
& \sin[\alpha]^2 \sin[t \omega]^2)^{3/2} \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. \\
& 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. \\
& 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( 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. \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( 16 \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)^{3/2} \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. \\
& 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}
& \frac{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 \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. \\
& \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]) \right. \\
& \quad \sin [\alpha]^2 \sin [t \omega] + M \theta^2 \sin [\alpha]^2 \sin [t \omega]^2 \\
& \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) \Big) / \\
& \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. \\
& \quad \left. \Big) \Big) \Big) / \left( 16 (1 + \cos [2 \alpha]) \right) \\
& \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]} \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) \Big) + \\
& \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 \sec [\alpha]^2 + \right. \right. \\
& \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} \\
& \quad \left. \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) \right. \\
& \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]) \right. \\
& \quad \quad \sin [\alpha]^2 \sin [t \omega] + M \theta^2 \sin [\alpha]^2 \sin [t \omega]^2 \\
& \quad \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) \Big) / \\
& \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. \\
& \quad \left. \Big) \Big) \Big) / \left( 16 (1 + \cos [2 \alpha]) \right) \\
& \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]} \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) \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 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) \Big) +
\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. \left. \right) \right) \right) / \\
& \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. \left. \right) \right) \right) / \\
& \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{DerGMatrix}[\alpha_, \omega_, t_, M0_] &:= \{\{\text{DerGMatrix11}[\alpha, \omega, t, M0], \text{DerGMatrix12}[\alpha, \omega, t, M0]\}, \\
&\{\text{DerGMatrix21}[\alpha, \omega, t, M0], \text{DerGMatrix22}[\alpha, \omega, t, M0]\}\} \\
\text{L11}[\alpha_, \omega_, t_, M0_, s_, r_, \theta_] &:= \\
& -\frac{1}{M0} 2i \sec[\alpha] \sin[t\omega]^2 \left( s + \left( \left( \sqrt{\left( \frac{1}{1 + \cos[2\alpha]} \left( -2 + 4M0 - 2\cos[2\alpha] - 2M0 \cos[2t\omega] + \right. \right. \right. \right. \right. \right. \right. \\
& \left. \left. M0 \cos[2\alpha - 2t\omega] + M0 \cos[2\alpha + 2t\omega] - 2\sqrt{2} \sqrt{M0^2 (6 + 2\cos[2\alpha] - \right. \right.} \right. \\
& \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{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( \left( 4 M0 - 2 M0 \cos[2t\omega] + M0 \cos[2\alpha - 2t\omega] + M0 \cos[2\alpha + 2t\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[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 + 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. \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega])} \sin[\alpha]^2 \sin[t\omega]^2 \right) \Bigg) \Bigg/ \\
& \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) \Bigg) + \\
& s \left( \left( i \cos[\alpha] \cot[\alpha] \csc[t\omega]^2 (-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) \\
& \quad \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 \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. \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega])} \sin[\alpha]^2 \sin[t\omega]^2 \right) \Bigg) \Bigg) \\
& \left( 4 M0 - 2 M0 \cos[2t\omega] + M0 \cos[2\alpha - 2t\omega] + M0 \cos[2\alpha + 2t\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[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega])} \sin[\alpha]^2 \sin[t\omega]^2 \right) \Bigg) \Bigg/ \\
& \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) \Bigg) \\
& \quad \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.}
\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( -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( 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 \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( 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( 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( 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( -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( 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) +
\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 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. \\
& \left. \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega]^2} \right) \Bigg) \\
& \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] + \right. \right. \right. \\
& \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. \\
& \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. \\
& \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 M0 - 2 \cos[2 \alpha] - 2 M0 \cos[2 t \omega] + M0 \cos[2 \alpha - 2 t \omega] + \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) \\
& \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. \\
& \left. \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega] + M0^2 \sin[\alpha]^2 \sin[t \omega]^2 \right. \\
& \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. \\
& \left. \sin[\alpha]^2 \sin[t \omega]^2)^{3/2} \right) \Bigg) - \\
& \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. \\
& \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. \\
& \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. \\
& \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 M0 - 2 \cos[2 \alpha] - 2 M0 \cos[2 t \omega] + M0 \cos[2 \alpha - 2 t \omega] + \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) \\
& \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. \\
& \left. \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega] + M0^2 \sin[\alpha]^2 \sin[t \omega]^2 \right. \\
& \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. \\
& \left. \sin[\alpha]^2 \sin[t \omega]^2)^{3/2} \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. \\
& \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. \\
& \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. \\
& \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)
\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) \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 \left. \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. \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. \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. \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. \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) \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])} \right. \\
& \quad \left. \sin[\alpha]^2 \sin[t \omega]^2 \right) \Bigg) \\
& \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) \\
& \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} \left. \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 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])} \\
& \quad \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] - \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( 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) \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 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) \\
& \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 + \\
& \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])} \\
& \quad \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] - \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) +
\end{aligned}$$



$$\begin{aligned}
& \left. \cos[2\alpha + 2t\omega] \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] - 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} \Bigg) \\
& \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] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2} \Bigg) \\
& \quad \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} \Bigg) \\
& \quad \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 \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 M0 (1 + \cos[2\alpha]) (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) + \\
& \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} \Bigg) \\
& \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] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2} \Bigg) \\
& \quad \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} \Bigg) \\
& \quad \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 \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_0 (1 + \cos[2\alpha]) \left( M_0^2 (6 + 2\cos[2\alpha] - 2\cos[2t\omega] + \cos[2\alpha - 2t\omega] + \right. \right. \\
& \quad \left. \left. \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2 \right)^{3/2} \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} \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} \right) \\
& \left( 4M_0 \omega \sin[2t\omega] + 2M_0 \omega \sin[2\alpha - 2t\omega] - 2M_0 \omega \sin[2\alpha + 2t\omega] - \right. \\
& \quad \left( \sqrt{2} (2M_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) \Bigg/ \\
& \left( \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) \Bigg) \Bigg/ \\
& \left( 64M_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) \\
& \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 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] + \right. \\
& \quad \left. \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2} \right) \Bigg) \Bigg) - \\
& \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} \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 + \\
& \quad 2M_0 \sec[\alpha]^2 \sin[t\omega]^2 + 2M_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) \\
& \left( 4M_0 \omega \sin[2t\omega] + 2M_0 \omega \sin[2\alpha - 2t\omega] - 2M_0 \omega \sin[2\alpha + 2t\omega] + \right. \\
& \quad \left( \sqrt{2} (2M_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) \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 - 2 \cos[2\alpha] - 2 M^2 \cos[2t\omega] + M^2 \cos[2\alpha - 2t\omega] + \right. \right. \\
& \quad \left. \left. M^2 \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 + 2 M^2 \cos[2t\omega] - M^2 \cos[2\alpha - 2t\omega] - \right. \right. \\
& \quad M^2 \cos[2\alpha + 2t\omega] + 2 M^2 \cos[\alpha - t\omega]^2 \sec[\alpha]^2 + \\
& \quad 2 M^2 \cos[2\alpha] \cos[\alpha - t\omega]^2 \sec[\alpha]^2 + 2 M^2 \sec[\alpha]^2 \sin[t\omega]^2 + \\
& \quad 2 M^2 \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 - 2 \cos[2\alpha] - 2 M^2 \cos[2t\omega] + M^2 \cos[2\alpha - 2t\omega] + \right. \right. \\
& \quad \left. \left. M^2 \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) \\
& \quad \left( -4 M^2 \omega \cos[t\omega] \sec[\alpha]^2 \sin[t\omega] - 4 M^2 \omega \cos[2\alpha] \cos[t\omega] \sec[\alpha]^2 \right. \\
& \quad \left. \sin[t\omega] + 4 M^2 \omega \sin[2t\omega] + 2 M^2 \omega \sin[2\alpha - 2t\omega] - \right. \\
& \quad 4 M^2 \omega \cos[\alpha - t\omega] \sec[\alpha]^2 \sin[\alpha - t\omega] - 4 M^2 \omega \cos[2\alpha] \\
& \quad \cos[\alpha - t\omega] \sec[\alpha]^2 \sin[\alpha - t\omega] - 2 M^2 \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 - 2 M^2 \cos[2t\omega] + M^2 \cos[2\alpha - 2t\omega] + \right. \right. \\
& \quad M^2 \cos[2\alpha + 2t\omega] - 2 M^2 \cos[\alpha - t\omega]^2 \sec[\alpha]^2 - \\
& \quad 2 M^2 \cos[2\alpha] \cos[\alpha - t\omega]^2 \sec[\alpha]^2 - 2 M^2 \sec[\alpha]^2 \sin[t\omega]^2 - \\
& \quad 2 M^2 \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 - 2 \cos[2\alpha] - 2 M^2 \cos[2t\omega] + M^2 \cos[2\alpha - 2t\omega] + \right. \right. \\
& \quad \left. \left. M^2 \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{-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) \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. \\
& r + \\
& \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.} \\
& \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. \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.} \\
& \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. \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 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 + \\
& \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} \Bigg) \\
& \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 \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} \Bigg) \Bigg) \Bigg) / \\
& \quad \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) + \\
& \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 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} \Bigg) \\
& \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 \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} \Bigg) \Bigg) \Bigg) / \\
& \quad \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) + \\
& \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 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} \Bigg) \\
& \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 \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} \Bigg) \Bigg) \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 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 +
\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 \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. \\
& \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 \left. 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) \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[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) \\
& \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)} \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) \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] - 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) \tan[\alpha] \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) \Big) + \\
& i \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. \\
& \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[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. \\
& \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) \Big) / \\
& \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( (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) \Big) \\
& \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)}
\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{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) \Bigg) \\
& \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 \left. \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. \right. \\
& \quad \left. \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. \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 + 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. \\
& \quad \left( 2 M0^2 \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. \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 (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) \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 \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. \\
& \quad \left. \left. 2 M0 \sec[\alpha]^2 \sin[t\omega]^2 - 2 M0 \cos[2\alpha] \sec[\alpha]^2 \sin[t\omega]^2 + \right. \right. \\
& \quad \left. \left. 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. \\
& \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. \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. \\
& \quad \left( 2 M0^2 \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. \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 (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( \left( -4 M0 + 2 M0 \cos[2t\omega] - M0 \cos[2\alpha - 2t\omega] - M0 \cos[2\alpha + 2t\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. \\
& \quad \left. \left. 2 M0 \sec[\alpha]^2 \sin[t\omega]^2 + 2 M0 \cos[2\alpha] \sec[\alpha]^2 \sin[t\omega]^2 + \right. \right. \\
& \quad \left. \left. 2 \sqrt{2} \sqrt{-M0^2 (-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) / \\
& \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) \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. \left. \cos[2\alpha + 2t\omega] \right) \sin[\alpha]^2 \sin[t\omega]^2 \right) \\
& \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 \left. \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. \right. \\
& \quad \left. \left. \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega] \right) \sin[\alpha]^2 \sin[t\omega]^2 \right) \right) \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 \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) / \\
& \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) \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. \left. \cos[2\alpha + 2t\omega] \right) \sin[\alpha]^2 \sin[t\omega]^2 \right) \\
& \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 \left. \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. \right. \\
& \quad \left. \left. \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega] \right) \sin[\alpha]^2 \sin[t\omega]^2 \right) \right) \Big) \Big) + \\
& \left( \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. \right. \\
& \quad \left. \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. \right. \\
& \quad \left. \left. \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega] \right) \sin[\alpha]^2 \sin[t\omega]^2 \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 \right.
\end{aligned}$$

$$\begin{aligned}
& \sin[t \omega] + 4 M \omega \sin[2 t \omega] + 2 M \omega \sin[2 \alpha - 2 t \omega] - \\
& 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) \Big) / \\
& \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) \Big) / \\
& \left( 8 \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. \\
& \quad \left. \sin[\alpha]^2 \sin[t \omega]^2} \right) + \\
& \left( \sqrt{\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) \Big) \\
& \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] + \\
& 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) \Big) / \\
& \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) \Big) \Big) / \\
& \left( 8 \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. \\
& \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( -4 M + 2 M \cos[2 t \omega] - \right. \right. \right. \right. \\
& \quad M \cos[2 \alpha - 2 t \omega] - 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) \Big) \\
& \sqrt{\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. \\
& \quad \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. \\
& \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) \\
& \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)
\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. \\
& \left. M0 \cos[2\alpha - 2t\omega] + M0 \cos[2\alpha + 2t\omega] - 2 M0 \cos[\alpha - t\omega]^2 \sec[\alpha]^2 - \right. \\
& \left. 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) \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. \\
& \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) \Bigg) \Bigg) \\
& \left( -4 M0 + 2 M0 \cos[2t\omega] - M0 \cos[2\alpha - 2t\omega] - M0 \cos[2\alpha + 2t\omega] + \right. \\
& \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. \\
& \left. 2 M0 \sec[\alpha]^2 \sin[t\omega]^2 + 2 M0 \cos[2\alpha] \sec[\alpha]^2 \sin[t\omega]^2 + \right. \\
& \left. 2 \sqrt{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) \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. \\
& \left. \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 M0 + 2 M0 \cos[2t\omega] - M0 \cos[2\alpha - 2t\omega] - \right. \right. \\
& \left. M0 \cos[2\alpha + 2t\omega] + 2 M0 \cos[\alpha - t\omega]^2 \sec[\alpha]^2 + \right. \\
& \left. 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) \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. \\
& \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) \Bigg) \Bigg) \\
& \left( 4 M0 - 2 M0 \cos[2t\omega] + M0 \cos[2\alpha - 2t\omega] + M0 \cos[2\alpha + 2t\omega] - \right. \\
& \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. \\
& \left. 2 M0 \sec[\alpha]^2 \sin[t\omega]^2 - 2 M0 \cos[2\alpha] \sec[\alpha]^2 \sin[t\omega]^2 + \right. \\
& \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. \\
& \left. \sin[\alpha]^2 \sin[t\omega]^2} \right) \left( 2 M0^2 \omega \cos[t\omega] (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] + M0^2 \sin[\alpha]^2 \right. \\
& \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 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 \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) \\
& \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 \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 \quad \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega] + M\theta^2 \sin[\alpha]^2 \\
& \quad \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 \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 \quad M\theta \cos[2\alpha + 2t\omega] + 2M\theta \cos[\alpha - t\omega]^2 \sec[\alpha]^2 + \\
& \quad \quad 2M\theta \cos[2\alpha] \cos[\alpha - t\omega]^2 \sec[\alpha]^2 + 2M\theta \sec[\alpha]^2 \sin[t\omega]^2 + \\
& \quad \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 \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 \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 \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 \quad \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega] + M\theta^2 \sin[\alpha]^2 \sin[t\omega]^2 \\
& \quad \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 \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 \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. \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) / \\
& \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 \sqrt{\left( \frac{1}{1 + \cos[2 \alpha]} \left( -2 + 4 M0 - 2 \cos[2 \alpha] - \right. \right. \right. \\
& \quad \left. \left. 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. \\
& \quad \left. \left. \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]) \right. \\
& \quad \left. \sin[\alpha]^2 \sin[t \omega]^2} \right) \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( \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. \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) / \\
& \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) \right) \\
& \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 + 4 M0 - \right. \right. \right. \right. \right. \\
& \quad \left. \left. 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) \right) \right) \\
& \tan[\alpha] \right) / \left( 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) +
\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) \Big) \Big) \\
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( \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] + 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. \\
& \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) \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])\sin[\alpha]^2\sin[t\omega]^2} \right) + \\
& \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] + 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) \Big) \\
& \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) \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])\sin[\alpha]^2\sin[t\omega]^2} \right) \Big) \\
& \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. \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)
\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( 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( 4M0 - 2M0 \cos[2t\omega] + M0 \cos[2\alpha - 2t\omega] + M0 \cos[2\alpha + 2t\omega] - \right. \\
& 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]} \left( -2 + 4M0 - 2\cos[2\alpha] - 2M0 \cos[2t\omega] + M0 \cos[2\alpha - 2t\omega] + \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) / \\
& \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) + \\
& e^{-i\theta} r \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. \\
& 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]} \left( -2 + 4M0 - 2\cos[2\alpha] - 2M0 \cos[2t\omega] + M0 \cos[2\alpha - 2t\omega] + \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) \\
& \left( 4M0 - 2M0 \cos[2t\omega] + M0 \cos[2\alpha - 2t\omega] + M0 \cos[2\alpha + 2t\omega] - \right. \\
& 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) / \\
& \left( 32M0 (1 + \cos[2\alpha]) \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) - \\
& \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)
\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 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) \Bigg) \\
& \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 \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) \Bigg) \Bigg) / \\
& \quad \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 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) \Bigg) \\
& \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 \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) \Bigg) \Bigg) / \\
& \quad \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 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) \Bigg) \\
& \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 \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.}
\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 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) \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 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) \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 + 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[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\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[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2} \right) \Bigg) \\
& \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 \\
& \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[2t\omega] - \cos[2\alpha - 2t\omega] - \cos[2\alpha + 2t\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[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} \left. \right) \Bigg) \\
& \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) \Bigg) / \\
& \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) \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{-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) \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) \\
& \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( (-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})} \\
& \quad (4M\theta\omega\sin[2t\omega] + 2M\theta\omega\sin[2\alpha - 2t\omega] - 2M\theta\omega\sin[2\alpha + 2t\omega] - \\
& \quad (\sqrt{2}(2M\theta^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] + 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) / \\
& \quad (\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) / \\
& \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( (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})} \\
& \quad (4M\theta\omega\sin[2t\omega] + 2M\theta\omega\sin[2\alpha - 2t\omega] - 2M\theta\omega\sin[2\alpha + 2t\omega] + \\
& \quad (\sqrt{2}(2M\theta^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] + 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) / \\
& \quad (\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) /
\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])\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])\sin[\alpha]^2\sin[t\omega]^2} \right) \\
& \left( - \left( \left( \left( \omega\cos[\alpha]\cot[\alpha]\cot[t\omega]\csc[t\omega]^2 \left( -4M0 + 2M0\cos[2t\omega] - \right. \right. \right. \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 \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]} \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])\sin[\alpha]^2\sin[t\omega]^2} \right) \Big) \Big) / \left( 16M0(1 + \cos[2\alpha])\sqrt{M0^2(6 + 2\cos[2\alpha] - \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) \Big) + \\
& \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} \Big) \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 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 \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} \Big) \Big) \Big) / \\
& \quad \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] + \right. \\
& \quad \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 + \\
& \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) \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 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 \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) \\
& \quad \left( 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]) \Big) \Big) / \\
& \quad \left( 64 M0 (1 + \cos[2 \alpha]) \left( M0^2 (6 + 2 \cos[2 \alpha] - 2 \cos[2 t \omega] + \cos[2 \alpha - 2 t \omega] + \right. \right. \\
& \quad \cos[2 \alpha + 2 t \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( 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) \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( \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 + \\
& \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 (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 \left. \right) \left( 2 M \theta^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] + M \theta^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. \right) / \\
& \left( 64 M \theta (1 + \cos[2 \alpha]) (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)^{3/2} \left. \right) + \\
& \left( \frac{1}{2} \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) \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 - 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) \left. \right) \\
& \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] + \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. \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. \right) / \\
& \left( 64 M \theta (1 + \cos[2 \alpha])^2 \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) \\
& \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.}
\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. \\
& \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} \Big) \\
& \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 + \\
& \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]) \sin[\alpha]^2 \sin[t\omega]^2} \Big) \\
& \quad \left( 4M0\omega \sin[2t\omega] + 2M0\omega \sin[2\alpha - 2t\omega] - 2M0\omega \sin[2\alpha + 2t\omega] + \right. \\
& \quad \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 \right. \\
& \quad \left. (4\omega \sin[2t\omega] + 2\omega \sin[2\alpha - 2t\omega] - 2\omega \sin[2\alpha + 2t\omega]) \Big) \Big) \Big) / \\
& \quad \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} \Big) \Big) \Big) / \\
& \quad \left( 64M0 (1 + \cos[2\alpha])^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. \\
& \quad \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. \\
& \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) \Big) + \\
& \quad \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} \Big) \\
& \quad \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] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2} \Big) \Big) \Big) \\
& \quad \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] - \\
& \quad 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 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{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) \Big/ \\
& \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 \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) \\
& \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) \\
& \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} \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/ \\
& \quad \left( \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) \Big) \Big/ \\
& \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. \right. \\
& \quad \left. \left. \cos[2 \alpha + 2 t \omega] \right) \sin[\alpha]^2 \sin[t \omega]^2} \right) \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 \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} \Big) \\
& \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] -
\end{aligned}$$

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

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



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

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

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

$$\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])\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. \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) \\
& \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) / \\
& \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) \\
& \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) / \\
& \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( \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) \\
& \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. \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) \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) \Big) \Big) +
\end{aligned}$$

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

$$\begin{aligned}
& \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{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. \right) \\
& \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) \left. \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]) \sin[\alpha]^2 \sin[t \omega]^2} \right) \left. \right) / \\
& \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. \\
& \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. 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) \left. \right) \left. \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. 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) \left. \right) \left. \right) \\
& \quad \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] - 4 M \theta \omega \cos[\alpha - t \omega] \\
& \quad \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] - \\
& \quad 2 M \theta \omega \sin[2 \alpha + 2 t \omega] + \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 \right. \\
& \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) / \\
& \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) \left. \right) / \\
& \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} \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. 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) \left. \right) \left. \right) \\
& \quad \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] + 4 M \theta \omega \cos[\alpha - t \omega] \\
& \quad \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] +
\end{aligned}$$

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

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

$$\begin{aligned}
& \cos[2\alpha + 2t\omega] \sin[\alpha]^2 \sin[t\omega]^2) \Big) - \\
& i \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. \\
& \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 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) \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 \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2} \Big) \Big) + \\
& \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 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 \\
& \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] - \\
& \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 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) \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 + \right. \\
& \quad 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] - \\
& \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 \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2} \Big) \Big) - \\
& \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 + 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] + 2\cos[2t\omega] - \\
& \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) / \\
& \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) - \\
& \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] \\
& \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_0^2 (-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 \\
& \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] - 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) / \\
& \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} \left. \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] + 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}$$



$$\text{ii.} \left( - \left( \left( -4 M \Theta + 2 M \Theta \cos [2 t \omega] - M \Theta \cos [2 \alpha - 2 t \omega] - M \Theta \cos [2 \alpha + 2 t \omega] + \right. \right. \right. \\ \left. \left. \left. 2 M \Theta \cos [\alpha - t \omega]^2 \sec [\alpha]^2 + 2 M \Theta \cos [2 \alpha] \cos [\alpha - t \omega]^2 \sec [\alpha]^2 + 2 M \Theta \sec [\alpha]^2 \right. \right. \right. \\ \left. \left. \left. \sin [t \omega]^2 + 2 M \Theta \cos [2 \alpha] \sec [\alpha]^2 \sin [t \omega]^2 + 2 \sqrt{2} \sqrt{-M \Theta^2} (-6 - 2 \cos [2 \alpha] + \right. \right. \right.$$

$$\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) - \\
& \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) \\
& \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) + \\
& \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) \\
& \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. \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) \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. \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)
\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) \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) \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) + \\
& 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 + 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] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2} \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 - 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) / \\
& \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} \Big) - \right. \\
& \left. \left( i \cos[\alpha] \cot[\alpha] \csc[t\omega]^2 \left( 4M0 - 2M0\cos[2t\omega] + M0\cos[2\alpha - 2t\omega] + M0 \right. \right. \right. \\
& \quad \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) \\
& \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] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2} \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 + 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) / \\
& \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} \Big) - \right. \\
& \left. \left( i \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 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) \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. \\
& \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) \Big)
\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) / \\
& \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) + \\
& \left( i \omega \cos[\alpha] \cot[\alpha] \cot[t \omega] \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 - 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] - \cos[2 \alpha - 2 t \omega] - \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega]^2} \left. \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 \left. 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) \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] + 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 + 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( 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) - \\
& \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 + 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] - \cos[2 \alpha - 2 t \omega] - \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega]^2} \left. \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 \left. 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) \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] - 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 - 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( 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 \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]) (M^0 (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)^{3/2} \right) + \\
& \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] \\
& \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]} (-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 \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. \\
& \quad \left. \cos[2 \alpha - 2 t \omega] + \cos[2 \alpha + 2 t \omega]) \sin[\alpha]^2 \sin[t \omega]^2} \Bigg) \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]) (M^0 (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)^{3/2} \right) + \\
& \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] - \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 M0 (1 + \cos[2\alpha])^2 \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. \\
& \quad \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 \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. \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 \left( 4 M0 - 2 M0 \cos[2t\omega] + M0 \cos[2\alpha - 2t\omega] + M0 \right. \right. \\
& \quad \cos[2\alpha + 2t\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[2t\omega] - \\
& \quad \cos[2\alpha - 2t\omega] - \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2} \Big) \\
& \quad \left( -4 M0 + 2 M0 \cos[2t\omega] - M0 \cos[2\alpha - 2t\omega] - M0 \cos[2\alpha + 2t\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[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2} \Big) \\
& \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} (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 (4 \omega \sin[2t\omega] + 2 \omega \sin[2\alpha - 2t\omega] - 2 \omega \sin[2\alpha + 2t\omega]) \Big) \Big) / \\
& \quad \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) \Big) / \\
& \left( 64 M0 (1 + \cos[2\alpha])^2 \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} \right. \\
& \quad \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} \Big) \Big) + \\
& \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 + 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[2t\omega] - \\
& \quad \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]} (-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} \Big) \Big)
\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 \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 \left( -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] \right) \sin[\alpha]^2 \sin[t \omega]^2} \Big) \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 \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. 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 \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 \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{\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) \\
& \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 \left. \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] \right. \\
& \quad \left. \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 \right. \\
& \quad \left. \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. \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) \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 \left. \left. \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 \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 \right. \right. \\
& \quad \left. \left. 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. \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. \\
& \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 \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)} \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) \Big/ \\
& \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) \Big/ \\
& \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)} \\
& \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) + \\
& \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) \\
& \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) \Big) \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) \\
& \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) \Big) \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)
\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. \\
& \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 \omega] \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) \\
& \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) / \\
& (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) - \\
& \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 + \right. \\
& \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) \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) \Big) \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 \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. 2 \cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega] \right) \sin[\alpha]^2 \sin[t\omega]^2 \left. \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) \right. \right. \\
& \quad \left. \left. \sin[\alpha]^2 \sin[t\omega] + M0^2 \sin[\alpha]^2 \sin[t\omega]^2 \left( 4 \omega \sin[2t\omega] + \right. \right. \right. \\
& \quad \left. \left. 2 \omega \sin[2\alpha - 2t\omega] - 2 \omega \sin[2\alpha + 2t\omega] \right) \right) \right) \left. \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) \left. \right) \left. \right) / \\
& \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. \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega] \right) \sin[\alpha]^2 \sin[t\omega]^2 \right) \left. \right) \left. \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. 2 \cos[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega] \right) \sin[\alpha]^2 \sin[t\omega]^2 \left. \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( 4 \omega \sin[2t\omega] + 2 \omega \sin[2\alpha - 2t\omega] - 2 \omega \sin[2\alpha + 2t\omega] \right) \right) \left. \right) / \\
& \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) \right.} \\
& \quad \left. \sin[\alpha]^2 \sin[t\omega]^2 \right) \left. \right) \left. \right) / \\
& \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. \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega] \right) \sin[\alpha]^2 \sin[t\omega]^2 \right) \left. \right) \left. \right) + \\
& \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.
\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{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) \Bigg) + \frac{1}{M0} \sec[\alpha]^2 (\cos[\alpha - t\omega]^2 + \sin[t\omega]^2) \\
& \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 \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[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 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. \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega])} \sin[\alpha]^2 \sin[t\omega]^2) \right) \Bigg) \Bigg) / \\
& \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( \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 (-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 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. \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega])} \sin[\alpha]^2 \sin[t\omega]^2) \right) \Bigg) \Bigg) / \\
& \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) \Bigg) - \\
& 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. \\
& \quad \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. \\
& \quad \left. \left. \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega])} \sin[\alpha]^2 \sin[t\omega]^2) \right) \right) \Bigg) \\
& \left( 4 M0 - 2 M0 \cos[2t\omega] + M0 \cos[2\alpha - 2t\omega] + M0 \cos[2\alpha + 2t\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[2t\omega] + \cos[2\alpha - 2t\omega] + \cos[2\alpha + 2t\omega])} \sin[\alpha]^2 \sin[t\omega]^2) \Bigg) \Bigg) / \\
& \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) +
\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 \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. \\
& \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) \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) / \\
& \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) / \\
& \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. \\
& \quad \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. \\
& \quad \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. \\
& \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/ \\
& \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. \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. \\
& \quad \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. \\
& \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) \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. \sin[\alpha]^2 \sin[t\omega]^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]} \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. \\
& \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( 2 M\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) \tan[\alpha] \Bigg) \Bigg/ \\
& \quad \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. \\
& \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]} \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. \\
& \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( 2 M\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.
\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. \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. \\
& \quad \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. \\
& \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])} \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.}
\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) - \\
& \cos[2\alpha + 2t\omega]) \sin[\alpha]^2 \sin[t\omega]^2 \Big) \Big) - \\
& i \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])
\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) \left. \right) \left. \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} \left. \right) \\
& \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])) \left. \right) \left. \right) / \\
& \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} \left. \right) \\
& \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[ \\
& \quad 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])) \left. \right) \left. \right) / (\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. \right) \left. \right) / \\
& \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) \left. \right) \left. \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} \left. \right) \\
& \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 \left. \right) \left. \right)
\end{aligned}$$

$$\begin{aligned}
& \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{\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) \sin[\alpha]^2 \sin[t \omega]^2 \right)} \right) / \\
& \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)} \\
& \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{\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) + \\
& \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) \\
& \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] - 4 M \theta \omega \cos[\alpha - t \omega] \\
& \quad \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 \\
& \quad 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] + \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 \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) \right) / \\
& \left( \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) \sin[\alpha]^2 \sin[t \omega]^2 \right)} \right) / \\
& \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) \\
& \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] + 4 M \theta \omega \cos[\alpha - t \omega] \\
& \quad \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 \\
& \quad 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] + \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 \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) \right) / \\
& \left( \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) \sin[\alpha]^2 \sin[t \omega]^2 \right)} \right) / \\
& \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)
\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) - \\
& 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) - \\
& 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} \Big) \tan[\alpha] \Big) \Big) \Big) / \\
& \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) \Big) + \\
& \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} \Big) \tan[\alpha] \Big) \Big) \Big) / \\
& \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) \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) \Big) \Big)
\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}$$

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

```

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]]
      (*Mθ=3.351*)
      Mθ = 3.3506871002735
      r = 1
      s = 1
      θ = π/2 - 1
      ω = √(s² - r² Sin[θ]²)
      α = ArcSin[(r/s) * Sin[θ]]
      τNew = (π/2)/ω
      Min[Table[Eigenvalues[MMatrix[α, ω, (k/1000) * τNew, Mθ]], {k, 1, 1000}]]

```

```
Out[36]= 3.35069
```

```
Out[37]= 1
```

```
Out[38]= 1
```

```
Out[39]= -1 +  $\frac{\pi}{2}$ 
```

```
Out[40]=  $\sqrt{1 - \cos[1]^2}$ 
```


```
Out[41]= -1 +  $\frac{\pi}{2}$ 
```

```
Out[42]=  $\frac{\pi}{2\sqrt{1 - \cos[1]^2}}$ 
```

```
Out[43]= 1.
```

```
In[44]:= 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[48]:= 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, τNew + 0.1}, MaxSteps → 2 * 106, AccuracyGoal → Automatic,
  PrecisionGoal → 30, WorkingPrecision → MachinePrecision, Method → "Extrapolation"]
```

```
Out[48]= { {ψ1 → InterpolatingFunction[ Domain: {{1. × 10-12, 1.97}} Output: scalar ],
  ψ2 → InterpolatingFunction[ Domain: {{1. × 10-12, 1.97}} Output: scalar ],
  ψ3 → InterpolatingFunction[ Domain: {{1. × 10-12, 1.97}} Output: scalar ],
  ψ4 → InterpolatingFunction[ Domain: {{1. × 10-12, 1.97}} Output: scalar ] ] }
```

```
In[49]:= OneOne = Evaluate[{ψ1[τNew], ψ2[τNew], ψ3[τNew], ψ4[τNew]} /. y1]
```

```
Out[49]= { { -6.20665 × 10-8 + 0.207747 i, -0.754711 + 6.16677 × 10-8 i,
  -4.10758 × 10-8 + 0.554294 i, 0.282863 + 4.04869 × 10-8 i } }
```





```
In[50]:= 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, τNew + 0.1}, MaxSteps → 2 * 106, AccuracyGoal → Automatic,
  PrecisionGoal → 50, WorkingPrecision → MachinePrecision, Method → "Extrapolation"]
```

```
Out[50]= { {ψ1 → InterpolatingFunction[ Domain: {{1. × 10-12, 1.97}}],
  ψ2 → InterpolatingFunction[ Domain: {{1. × 10-12, 1.97}}],
  ψ3 → InterpolatingFunction[ Domain: {{1. × 10-12, 1.97}}],
  ψ4 → InterpolatingFunction[ Domain: {{1. × 10-12, 1.97}}] ] }
```

```
In[51]:= OneTwo = Evaluate[{ψ1[τNew], ψ2[τNew], ψ3[τNew], ψ4[τNew]} /. y2]
```

```
Out[51]= { {-0.754709 + 3.21716 × 10-8 i, 3.25456 × 10-8 - 0.207693 i,
  0.28292 + 2.13836 × 10-8 i, 2.1191 × 10-8 - 0.554287 i} }
```





```
In[52]:= 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, τNew + 0.1}, MaxSteps → 2 * 106, AccuracyGoal → Automatic,
  PrecisionGoal → 50, WorkingPrecision → MachinePrecision, Method → "Extrapolation"]
```

```
Out[52]= { {ψ1 → InterpolatingFunction[ Domain: {{1. × 10-12, 1.97}}],
  ψ2 → InterpolatingFunction[ Domain: {{1. × 10-12, 1.97}}],
  ψ3 → InterpolatingFunction[ Domain: {{1. × 10-12, 1.97}}],
  ψ4 → InterpolatingFunction[ Domain: {{1. × 10-12, 1.97}}] ] }
```

```
In[53]:= TwoOne = Evaluate[{ψ1[τNew], ψ2[τNew], ψ3[τNew], ψ4[τNew]} /. y3]
```

```
Out[53]= { {4.10758 × 10-8 - 0.554294 i, -0.282863 - 4.04869 × 10-8 i,
  -6.20665 × 10-8 + 0.207747 i, -0.754711 + 6.16677 × 10-8 i} }
```

```
In[54]:= 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, τNew + 0.1}, MaxSteps → 2 * 10^6, AccuracyGoal → Automatic,
  PrecisionGoal → 50, WorkingPrecision → MachinePrecision, Method → "Extrapolation"]
```

```
Out[54]= { {ψ1 → InterpolatingFunction[ Domain: {{1. × 10^-12, 1.97}}],
  ψ2 → InterpolatingFunction[ Domain: {{1. × 10^-12, 1.97}}],
  ψ3 → InterpolatingFunction[ Domain: {{1. × 10^-12, 1.97}}],
  ψ4 → InterpolatingFunction[ Domain: {{1. × 10^-12, 1.97}}] ] }
```

```
In[55]:= TwoTwo = Evaluate[{ψ1[τNew], ψ2[τNew], ψ3[τNew], ψ4[τNew]} /. y4]
```

```
Out[55]= {{-0.282921 - 2.11216 × 10^-8 i, -2.09325 × 10^-8 + 0.554287 i,
  -0.754708 + 3.17699 × 10^-8 i, 3.21493 × 10^-8 - 0.207694 i}}
```

```
In[56]:= OneOneStart = KroneckerProduct[{ {1, 0} }, { {1, 0} }]
OneTwoStart = KroneckerProduct[{ {1, 0} }, { {0, 1} }]
TwoOneStart = KroneckerProduct[{ {0, 1} }, { {1, 0} }]
TwoTwoStart = KroneckerProduct[{ {0, 1} }, { {0, 1} }]
```

```
Out[56]= { {1, 0, 0, 0} }
```

```
Out[57]= { {0, 1, 0, 0} }
```

```
Out[58]= { {0, 0, 1, 0} }
```

```
Out[59]= { {0, 0, 0, 1} }
```

```
In[60]:= U = Transpose[OneOneStart].OneOne + Transpose[OneTwoStart].OneTwo +
  Transpose[TwoOneStart].TwoOne + Transpose[TwoTwoStart].TwoTwo
```

```
Out[60]= {{-6.20665 × 10^-8 + 0.207747 i, -0.754711 + 6.16677 × 10^-8 i,
  -4.10758 × 10^-8 + 0.554294 i, 0.282863 + 4.04869 × 10^-8 i}, {-0.754709 + 3.21716 × 10^-8 i,
  3.25456 × 10^-8 - 0.207693 i, 0.28292 + 2.13836 × 10^-8 i, 2.1191 × 10^-8 - 0.554287 i},
  {4.10758 × 10^-8 - 0.554294 i, -0.282863 - 4.04869 × 10^-8 i, -6.20665 × 10^-8 + 0.207747 i,
  -0.754711 + 6.16677 × 10^-8 i}, {-0.282921 - 2.11216 × 10^-8 i,
  -2.09325 × 10^-8 + 0.554287 i, -0.754708 + 3.17699 × 10^-8 i, 3.21493 × 10^-8 - 0.207694 i}}
```



In[61]:= **MatrixForm[U]**

Out[61]//MatrixForm=

$$\begin{pmatrix} -6.20665 \times 10^{-8} + 0.207747 i & -0.754711 + 6.16677 \times 10^{-8} i & -4.10758 \times 10^{-8} + 0.554294 i & 0.282863 - \\ -0.754709 + 3.21716 \times 10^{-8} i & 3.25456 \times 10^{-8} - 0.207693 i & 0.28292 + 2.13836 \times 10^{-8} i & 2.1191 \times 1 \\ 4.10758 \times 10^{-8} - 0.554294 i & -0.282863 - 4.04869 \times 10^{-8} i & -6.20665 \times 10^{-8} + 0.207747 i & -0.754711 \\ -0.282921 - 2.11216 \times 10^{-8} i & -2.09325 \times 10^{-8} + 0.554287 i & -0.754708 + 3.17699 \times 10^{-8} i & 3.21493 \times \end{pmatrix}$$

In[6]:= **MatrixForm[U.Conjugate[Transpose[U]]]**

Out[6]//MatrixForm=

$$\begin{pmatrix} 1. + 0. i & -4.26359 \times 10^{-11} + 0.0000664137 i & 0. - 1.47738 \times 10^{-7} i \\ -4.26359 \times 10^{-11} - 0.0000664137 i & 1. + 0. i & -5.80073 \times 10^{-8} - 0.000024328 i \\ 0. + 1.47738 \times 10^{-7} i & -5.80073 \times 10^{-8} + 0.000024328 i & 1. + 0. i \\ 5.80073 \times 10^{-8} + 0.000024328 i & 0. - 3.21037 \times 10^{-8} i & -4.26359 \times 10^{-11} - 0.0000664137 i \end{pmatrix}$$

In[6]:= **(\*In ideal life, it has to be a unit matrix\*)**

In[6]:=

In[6]:=

In[6]:=

In[6]:=

In[6]:=

In[6]:=

In[6]:=

In[6]:=

In[6]:=

In[6]:=

In[6]:=