Computational Companion to “Flexible 3×3 Nets of Equimodular Elliptic Type” — Example 2

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Tested on: Mathematica 14.0

In[1774]:=

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(*================================================================================
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 =====*)
(*Quit*)
(*All angle sets in degrees*)
anglesRad = {
   {ArcCos[1 / Sqrt[5]], ArcCos[7 / (5 Sqrt[2])],
    ArcCos[-1 / Sqrt[10]], ArcCos[0]}, (*Vertex 1*)
   {ArcCos[1 / (4 Sqrt[11])], ArcCos[7 Sqrt[7] / (4 Sqrt[22])],
    ArcCos[-1 / (2 Sqrt[2])], ArcCos[0]}, (*Vertex 2*)
   {ArcCos[1 / (4 Sqrt[11])], ArcCos[7 Sqrt[7] / (4 Sqrt[22])],
    ArcCos[1 / (2 Sqrt[2])], ArcCos[0]}, (*Vertex 3*)
   {ArcCos[1 / Sqrt[5]], ArcCos[7 / (5 Sqrt[2])],
    ArcCos[1 / Sqrt[10]], ArcCos[0]} (*Vertex 4*)};

anglesDeg = anglesRad * 180 / Pi;


(*--------------------------------------------*)
(*Function to compute sigma from 4 angles*)
computeSigma[{α_, β_, γ_, δ_}] := (α + β + γ + δ) / 2;

(*--------------------------------------------*)
(*Function to compute a,b,c,d from angles*)
computeABCD[{α_, β_, γ_, δ_}] :=
  Module[{alpha = α Degree, beta = β Degree, gamma = γ Degree,
    delta = δ Degree, sigma}, sigma = computeSigma[{α, β, γ, δ} Degree];
   {Sin[alpha] / Sin[sigma - alpha], Sin[beta] / Sin[sigma - beta],
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    Sin[gamma] / Sin[sigma - gamma], Sin[delta] / Sin[sigma - delta]}];

(*------------------------------------------*)
(*Compute all σ values*)
sigmas = computeSigma /@ anglesDeg;

(*Compute all {a,b,c,d} values*)
results = computeABCD /@ anglesDeg;

(*Optional:extract individual values*)
{a1, b1, c1, d1} = results⟦1⟧;
{a2, b2, c2, d2} = results⟦2⟧;
{a3, b3, c3, d3} = results⟦3⟧;
{a4, b4, c4, d4} = results⟦4⟧;
{σ1, σ2, σ3, σ4} = FullSimplify[sigmas];


(*=========================================================================
 =====*)
(*===============================
   CONDITION (N.0)==============================*)
(*=========================================================================
 =====*)
uniqueCombos = {{1, 1, 1, 1}, {1, 1, 1, -1}, {1, 1, -1, -1}, {1, 1, -1, 1},
   {1, -1, 1, 1}, {1, -1, -1, 1}, {1, -1, 1, -1}, {1, -1, -1, -1}};

checkConditionN0Degrees[{α_, β_, γ_, δ_}] :=
  Module[{angles = {α, β, γ, δ}, results},
   results = Mod[uniqueCombos.angles, 360] // Chop;
   ! MemberQ[results, 0]];

conditionsN0 = checkConditionN0Degrees /@ anglesDeg;
allVerticesPass = And @@ conditionsN0;

Column[{TextCell[Style["================= CONDITION (N.0) =================",
    Darker[Green], Bold, 16], "Text"],
  If[allVerticesPass,
   Style["✔ All vertices satisfy (N.0).", Darker[Green], Bold],
   Style["✘ Some vertices fail (N.0).", Red, Bold]]}]


(*=========================================================================
 =====*)
(*===============================
   CONDITION (N.3)==============================*)
(*=========================================================================
 =====*)
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Ms = FullSimplify[Times @@@ results];
allEqualQ = Simplify[Equal @@ Ms];

Column[{TextCell[Style["================= CONDITION (N.3) =================",
     Darker[Blue], Bold, 16], "Text"], If[allEqualQ,
   Row[{Style["✓ M1 = M2 = M3 = M4 = ", Bold], Ms⟦1⟧}],
   Style["✘ M_i are not all equal.", Red, Bold]]}]


(*============================================================================
 =====*)
(*==========================CONDITION (N.4)==========================*)
(*============================================================================
 =====*)
aList = results⟦All, 1⟧;
cList = results⟦All, 3⟧;
dList = results⟦All, 4⟧;

rList = FullSimplify /@ (aList * dList); {r1, r2, r3, r4} = rList;
sList = FullSimplify /@ (cList * dList); {s1, s2, s3, s4} = sList;

Column[{TextCell[Style["================= CONDITION (N.4) =================",
     Darker[Purple], Bold, 16], "Text"],
  If[r1 == r2 && r3 == r4 && s1 == s4 && s2 == s3, Column[
    {Row[{Style["✓ r1 = r2 = ", Bold], r1, Style["; ✓ r3 = r4 = ", Bold], r3}],
     Row[{Style["✓ s1 = s4 = ", Bold], s1, Style["; ✓ s2 = s3 = ", Bold],
       s2}]}], Style["✘ Condition (N.4) fails.", Red, Bold]]
 }]


(*============================================================================
 =====*)
(*================================
  CONDITION (N.5)==============================*)
(*============================================================================
 =====*)
fList = FullSimplify /@ (aList * cList); {f1, f2, f3, f4} = fList;
M1 = Ms⟦1⟧;

m[M1_] := Piecewise[{{1 - M1, M1 < 1}, {(M1 - 1) / M1, M1 > 1}}] // N;
K = EllipticK[m[M1]] // N;
Kp = EllipticK[1 - m[M1]] // N;

computeTi[i_] :=
  Module[{sigma = sigmas⟦i⟧, r = rList⟦i⟧, s = sList⟦i⟧, f = fList⟦i⟧, base},
   base = I * Im[InverseJacobiDN[Piecewise[
          {{Sqrt[f], M1 < 1}, {1 / Sqrt[f], M1 > 1}}], m[M1]]] / Kp;
```

```
   Which[sigma < 180, Which[r > 1 && s > 1, base, (r < 1 && s > 1) || (r > 1 && s < 1),
     1 + base, r < 1 && s < 1, 2 + base], sigma > 180, Which[r > 1 && s > 1,
     2 + base, (r < 1 && s > 1) || (r > 1 && s < 1), 3 + base, r < 1 && s < 1, base]]];

tList = computeTi /@ Range[4];
RoundWithTolerance[x_, tol_ : 10^-6] := Module[{nearest}, nearest = Round[x];
   If[Abs[x - nearest] ≤ tol, nearest, x]];

checkValidCombination[M1_, ε_ : 10^-6] :=
  Module[{i, combo, dotProd, rePart, imPart, n2, expr, foundQ = False},
   Print[Style["⚠ Approximate validation using ε-tolerance. For rigorous
       proof, see the referenced paper.", Darker@Orange, Italic]];
   Do[combo = uniqueCombos[[i]];
    dotProd = tList.combo;
    rePart = Abs[Re[dotProd]];
    imPart = Abs[Im[dotProd]];
    If[M1 < 1,
     If[Mod[RoundWithTolerance[rePart], 4] < ε,
      If[Mod[RoundWithTolerance[imPart], 2] < ε, expr =
        tList[[1]] + combo[[2]] × tList[[2]] + combo[[3]] × tList[[3]] + combo[[4]] × tList[[4]];
       Print[Style["✅ Valid Combination Found (M < 1):",
          Darker[Green], Bold], "\n", Style["e1 = ", Bold], combo[[2]],
        Style[", e2 = ", Bold], combo[[3]], Style[", e3 = ", Bold], combo[[4]],
        "\n", Style["t1 = ", Bold], Re[tList[[1]]], "K + ", Im[tList[[1]]], "iK'",
        "\n", Style["t2 = ", Bold], Re[tList[[2]]], "K + ", Im[tList[[2]]], "iK'",
        "\n", Style["t3 = ", Bold], Re[tList[[3]]], "K + ", Im[tList[[3]]], "iK'",
        "\n", Style["t4 = ", Bold], Re[tList[[4]]], "K + ", Im[tList[[4]]],
        "iK'", "\n", Style["t1 + e1*t2 + e2*t3 + e3*t4 = ", Bold],
        Re[expr], "K + ", Im[expr], "iK'"];
       foundQ = True;
       Break[]]]];
    If[M1 > 1,
     If[Mod[RoundWithTolerance[imPart], 2] < ε,
      n2 = Quotient[RoundWithTolerance[imPart], 2];
      If[Mod[RoundWithTolerance[Abs[rePart - 2 n2]], 4] < ε, expr =
        tList[[1]] + combo[[2]] × tList[[2]] + combo[[3]] × tList[[3]] + combo[[4]] × tList[[4]];
       Print[Style["✅ Valid Combination Found (M > 1):",
          Darker[Green], Bold], "\n", Style["e1 = ", Bold], combo[[2]],
        Style[", e2 = ", Bold], combo[[3]], Style[", e3 = ", Bold], combo[[4]],
        "\n", Style["t1 = ", Bold], Re[tList[[1]]], "K + ", Im[tList[[1]]], "iK'",
        "\n", Style["t2 = ", Bold], Re[tList[[2]]], "K + ", Im[tList[[2]]], "iK'",
        "\n", Style["t3 = ", Bold], Re[tList[[3]]], "K + ", Im[tList[[3]]], "iK'",
        "\n", Style["t4 = ", Bold], Re[tList[[4]]], "K + ", Im[tList[[4]]],
        "iK'", "\n", Style["t1 + e1*t2 + e2*t3 + e3*t4 = ", Bold],
        Re[expr], "K + ", Im[expr], "iK'"];
```

```
        foundQ = True;
        Break[]]]], {i, Length[uniqueCombos]}];
    If[! foundQ, Print[Style["❌ No valid combination found.", Red, Bold], "\n",
      Style["t1 = ", Bold], Re[tList[[1]]], "K + ", Im[tList[[1]]], "iK'", "\n",
      Style["t2 = ", Bold], Re[tList[[2]]], "K + ", Im[tList[[2]]], "iK'", "\n",
      Style["t3 = ", Bold], Re[tList[[3]]], "K + ", Im[tList[[3]]], "iK'", "\n",
      Style["t4 = ", Bold], Re[tList[[4]]], "K + ", Im[tList[[4]]], "iK'", "\n"]];];


Column[{TextCell[Style["================= CONDITION (N.5) =================",
     Darker[Red], Bold, 16], "Text"]}]
res = checkValidCombination[M1];



(*==========================================================================
 =====*)
(*================================
   OTHER PARAMETER=================================*)
(*==========================================================================
 =====*)
cosSigmaAlt[Mi_, fi_, ri_, si_] :=
  (Mi (fi + ri + si - 1) + ri fi si - ri fi - ri si - fi si) / (2 Sqrt[ri si fi] (1 - Mi));

Column[
 {TextCell[Style["================= OTHER PARAMETERS =================",
     Darker[Orange], Bold, 16], "Text"],
  Row[{Style["u = ", Bold], 1 - M1}],
  Row[{Style["σ1 = ", Bold], σ1 Degree, Style[", σ2 = ", Bold], σ2 Degree,
     Style[", σ3 = ", Bold], σ3 Degree, Style[", σ4 = ", Bold], σ4 Degree}],
  Row[{Style["σ1 ≈ ", Bold], N[σ1], Style["°", Bold], Style[", σ2 ≈ ", Bold],
     N[σ2], Style["°", Bold], Style[", σ3 ≈ ", Bold], N[σ3],
     Style["°", Bold], Style[", σ4 ≈ ", Bold], N[σ4], Style["°", Bold]}],
  Row[{Style["cosσ1 = ", Bold], Simplify@cosSigmaAlt[M1, f1, r1, s1],
     Style[", cosσ2 = ", Bold], Simplify@cosSigmaAlt[M1, f2, r2, s2],
     Style[", cosσ3 = ", Bold], Simplify@cosSigmaAlt[M1, f3, r3, s3],
     Style[", cosσ4 = ", Bold], Simplify@cosSigmaAlt[M1, f4, r4, s4]}],
  Row[{Style["f1 = ", Bold], f1, Style[", f2 = ", Bold],
     f2, Style[", f3 = ", Bold], f3, Style[", f4 = ", Bold], f4}],
  Row[{Style["z1 = ", Bold], FullSimplify[1 / (f1 - 1)], Style[", z2 = ", Bold],
     FullSimplify[1 / (f2 - 1)], Style[", z3 = ", Bold], FullSimplify[1 / (f3 - 1)],
     Style[", z4 = ", Bold], FullSimplify[1 / (f4 - 1)]}],
  Row[{Style["x1 = ", Bold], FullSimplify[1 / (r1 - 1)], Style[", x2 = ", Bold],
     FullSimplify[1 / (r2 - 1)], Style[", x3 = ", Bold], FullSimplify[1 / (r3 - 1)],
     Style[", x4 = ", Bold], FullSimplify[1 / (r4 - 1)]}],
  Row[{Style["y1 = ", Bold], FullSimplify[1 / (s1 - 1)], Style[", y2 = ", Bold],
     FullSimplify[1 / (s2 - 1)], Style[", y3 = ", Bold], FullSimplify[1 / (s3 - 1)],
     Style[", y4 = ", Bold], FullSimplify[1 / (s4 - 1)]}],
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  Row[{Style["p1 = ", Bold], Simplify[Sqrt[r1 - 1]],
    Style[", p2 = ", Bold], Simplify[Sqrt[r2 - 1]], Style[", p3 = ", Bold],
    Simplify[Sqrt[r3 - 1]], Style[", p4 = ", Bold], Simplify[Sqrt[r4 - 1]]}],
  Row[{Style["q1 = ", Bold], Simplify[Sqrt[s1 - 1]],
    Style[", q2 = ", Bold], Simplify[Sqrt[s2 - 1]], Style[", q3 = ", Bold],
    Simplify[Sqrt[s3 - 1]], Style[", q4 = ", Bold], Simplify[Sqrt[s4 - 1]]}],
  Row[{Style["p1·q1 = ", Bold], Simplify[Sqrt[r1 - 1] Sqrt[s1 - 1]],
    Style[", p2·q2 = ", Bold], Simplify[Sqrt[r2 - 1] Sqrt[s2 - 1]],
    Style[", p3·q3 = ", Bold], Simplify[Sqrt[r3 - 1] Sqrt[s3 - 1]],
    Style[", p4·q4 = ", Bold], Simplify[Sqrt[r4 - 1] Sqrt[s4 - 1]]}]
 }]


(*==========================================================================
 =====*)
(*==============================
  BRICARD's EQUATIONS==============================*)
(*==========================================================================
 =====*)
(*=================================
 FLEXION 1=================================*)
Z[t_] := t;
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$$W1[t\_] := \frac{6\,t - \sqrt{2\,(3\,t^2 - 1)\,(2 - 3\,t^2)}}{1 + 3\,t^2};$$

$$U[t\_] := \frac{1}{t};$$

$$W2[t\_] := \frac{5\,\sqrt{7}\,t - \sqrt{10\,(3\,t^2 - 1)\,(2 - 3\,t^2)}}{4 + 9\,t^2};$$

```
(*General polynomial constructor*)
BricardsEquation[{α_, β_, γ_, δ_}, σ_, x_, y_] :=
  Module[{c22, c20, c02, c11, c00},
   c22 = Sin[σ - δ] Sin[σ - δ - β];
   c20 = Sin[σ - α] Sin[σ - α - β];
   c02 = Sin[σ - γ] Sin[σ - γ - β];
   c11 = -Sin[α] Sin[γ];
   c00 = Sin[σ] Sin[σ - β];
   c22 x^2 y^2 + c20 x^2 + c02 y^2 + 2 c11 x y + c00];

(*Compute and print all P_i for flexion 1*)
TextCell[
 Style["================= FLEXIBILITY (FLEXION 1) =================",
  Darker[Cyan], Bold, 16], "Text"]
funcs = {{Z, W1}, {Z, W2}, {U, W2}, {U, W1}};
Do[angles = anglesDeg⟦i⟧ Degree;
  sigma = sigmas⟦i⟧ Degree;
```

```
  {α, β, γ, δ} = angles;
  poly = Which[i == 1, BricardsEquation[{α, β, γ, δ}, sigma, Z[t], W1[t]],
    i == 2, BricardsEquation[{α, β, γ, δ}, sigma, Z[t], W2[t]],
    i == 3, BricardsEquation[{α, β, γ, δ}, sigma, U[t], W2[t]],
    i == 4, BricardsEquation[{α, β, γ, δ}, sigma, U[t], W1[t]]];
  Print[Row[{Subscript["P", i], "[", funcs[[i, 1]],
     ", ", funcs[[i, 2]], "] = ", FullSimplify[poly]}]], {i, 1, 4}];

(*=================================
 FLEXION 2=================================*)
Z2[t_] := t;
W12[t_] := (6 t + Sqrt[2 (3 t^2 - 1) (2 - 3 t^2)])/(1 + 3 t^2);
U2[t_] := 1/t;
W22[t_] := (5 Sqrt[7] t + Sqrt[10 (3 t^2 - 1) (2 - 3 t^2)])/(4 + 9 t^2);

(*General polynomial constructor*)
BricardsEquation[{α_, β_, γ_, δ_}, σ_, x_, y_] :=
  Module[{c22, c20, c02, c11, c00},
   c22 = Sin[σ - δ] Sin[σ - δ - β];
   c20 = Sin[σ - α] Sin[σ - α - β];
   c02 = Sin[σ - γ] Sin[σ - γ - β];
   c11 = -Sin[α] Sin[γ];
   c00 = Sin[σ] Sin[σ - β];
   c22 x^2 y^2 + c20 x^2 + c02 y^2 + 2 c11 x y + c00];

(*Compute and print all P_i for flexion 2*)
TextCell[
 Style["================= FLEXIBILITY (FLEXION 2) =================",
  Cyan, Bold, 16], "Text"]
funcs = {{Z, W1}, {Z, W2}, {U, W2}, {U, W1}};
Do[angles = anglesDeg[[i]] Degree;
  sigma = sigmas[[i]] Degree;
  {α, β, γ, δ} = angles;
  poly = Which[i == 1, BricardsEquation[{α, β, γ, δ}, sigma, Z2[t], W12[t]],
    i == 2, BricardsEquation[{α, β, γ, δ}, sigma, Z2[t], W22[t]],
    i == 3, BricardsEquation[{α, β, γ, δ}, sigma, U2[t], W22[t]],
    i == 4, BricardsEquation[{α, β, γ, δ}, sigma, U2[t], W12[t]]];
  Print[Row[{Subscript["P", i], "[", funcs[[i, 1]],
     ", ", funcs[[i, 2]], "] = ", FullSimplify[poly]}]], {i, 1, 4}];


(*==========================================================================
 =====*)
```

```
(*==================================
 NOT TRIVIAL==================================*)
(*==========================================================================
 =====*)
(*Define domain limits for t*)
tMin = 1 / Sqrt[3];
tMax = Sqrt[2 / 3];

(*==================================
 FLEXION 1==================================*)
(*List of expressions to plot*)
expressions = {Z[t], W2[t], U[t], W1[t]};
labels = {"Z", "W2", "U", "W1"};

Column[{TextCell[
   Style["================ NOT TRIVIAL (FLEXION 1) ================",
    Darker[Brown], Bold, 16], "Text"],

  (*Explanatory text*)
  TextCell[Style["This configuration does not belong to the trivial class –
     even after switching the boundary strips – since none of the
     functions Z, W2, U, or W1 is constant.", GrayLevel[0.3]], "Text"],
  Spacer[12],

  (*Plots in a light panel*)
  Panel[GraphicsGrid[Partition[Table[Plot[expressions⟦i⟧, {t, tMin, tMax},
      PlotLabel → Style[labels⟦i⟧, Bold, 14], PlotRange → All,
      AxesLabel → {"t", None}, ImageSize → 250], {i, Length[expressions]}], 2],
    Spacings → {2, 2}], Background → Lighter[Gray, 0.95], FrameMargins → 15]

 }]

(*==================================
 FLEXION 2==================================*)
(*List of expressions to plot*)
expressions = {Z2[t], W22[t], U2[t], W12[t]};
labels = {"Z", "W2", "U", "W1"};

Column[{TextCell[
   Style["================ NOT TRIVIAL (FLEXION 2) ================",
    Brown, Bold, 16], "Text"],

  (*Explanatory text*)
  TextCell[Style["This configuration does not belong to the trivial class –
     even after switching the boundary strips – since none of the
     functions Z, W2, U, or W1 is constant.", GrayLevel[0.3]], "Text"],
  Spacer[12],
```

```
  (*Plots in a light panel*)
  Panel[GraphicsGrid[Partition[Table[Plot[expressions⟦i⟧, {t, tMin, tMax},
       PlotLabel → Style[labels⟦i⟧, Bold, 14], PlotRange → All,
       AxesLabel → {"t", None}, ImageSize → 250], {i, Length[expressions]}], 2],
    Spacings → {2, 2}], Background → Lighter[Gray, 0.95], FrameMargins → 15]

 }]


(*=============================================================================
 =====*)
(*===================
 NOT LINEAR COMPOUND & NOT LINEAR CONJUGATE===================*)
(*=============================================================================
 =====*)
(*Define domain limits for t*)
tMin = 1 / Sqrt[3];
tMax = Sqrt[2 / 3];

(*==================================
 FLEXION 1=================================*)
(*List of expressions& labels*)
expressions =
  {Z[t] * U[t], Z[t] / U[t], W1[t] * W2[t], W1[t] / W2[t], Z[t] * W2[t], Z[t] / W2[t],
   U[t] * W1[t], U[t] / W1[t], Z[t] * W1[t], Z[t] / W1[t], W2[t] * U[t], W2[t] / U[t]};
labels = {"Z * U", "Z / U", "W1 * W2", "W1 / W2", "Z * W2", "Z / W2",
   "U * W1", "U / W1", "Z * W1", "Z / W1", "W2 * U", "W2 / U"};

Column[
 {TextCell[Style["============= NOT LINEAR COMPOUND & NOT LINEAR CONJUGATE
      (FLEXION 1) =============", Darker[Magenta], Bold, 16], "Text"],

  (*Explanatory text*)TextCell[
   Style["This configuration does not belong to the Linear compound class nor
      to the linear conjugate class – even after switching the boundary
      strips – since none of the functions ZU, Z/U, W1W2, W1/W2, ZW2,
      Z/W2, UW1, and U/W1 is constant. In addition, none of ZW1,
      Z/W1, W2U, W2/U is constant as well.", GrayLevel[0.3]], "Text"],
  Spacer[12],

  (*Plots panel*)
  Panel[GraphicsGrid[Partition[Table[Plot[expressions⟦i⟧, {t, tMin, tMax},
       PlotLabel → Style[labels⟦i⟧, Bold, 14], PlotRange → All,
       AxesLabel → {"t", None}, ImageSize → 250], {i, Length[expressions]}], 2],
    Spacings → {2, 2}], Background → Lighter[Gray, 0.95], FrameMargins → 15]
 }]
```

```
(*=================================
 FLEXION 2=================================*)
(*List of expressions& labels*)
expressions = {Z2[t] * U2[t], Z2[t] / U2[t], W12[t] * W22[t], W12[t] / W22[t],
   Z2[t] * W22[t], Z2[t] / W22[t], U2[t] * W12[t], U2[t] / W12[t],
   Z2[t] * W12[t], Z2[t] / W12[t], W22[t] * U2[t], W22[t] / U2[t]};
labels = {"Z * U", "Z / U", "W1 * W2", "W1 / W2", "Z * W2", "Z / W2",
   "U * W1", "U / W1", "Z * W1", "Z / W1", "W2 * U", "W2 / U"};

Column[
 {TextCell[Style["============= NOT LINEAR COMPOUND & NOT LINEAR CONJUGATE
      (FLEXION 2) =============", Magenta, Bold, 16], "Text"],

  (*Explanatory text*)TextCell[
   Style["This configuration does not belong to the Linear compound class nor
      to the linear conjugate class — even after switching the boundary
      strips — since none of the functions ZU, Z/U, W1W2, W1/W2, ZW2,
      Z/W2, UW1, and U/W1 is constant. In addition, none of ZW1,
      Z/W1, W2U, W2/U is constant as well.", GrayLevel[0.3]], "Text"],
  Spacer[12],

  (*Plots panel*)
  Panel[GraphicsGrid[Partition[Table[Plot[expressions[[i]], {t, tMin, tMax},
       PlotLabel → Style[labels[[i]], Bold, 14], PlotRange → All,
       AxesLabel → {"t", None}, ImageSize → 250], {i, Length[expressions]}], 2],
    Spacings → {2, 2}], Background → Lighter[Gray, 0.95], FrameMargins → 15]
 }]


(*======================================================================
 =====*)
(*=========================
 SWITCHING BOUNDARY STRIPS=========================*)
(*======================================================================
 =====*)
SwitchingRightBoundaryStrip[anglesDeg_List] := Module[{modified = anglesDeg},
  (*Indices:{row,column}={1,2},{1,3},{4,2},{4,3}*)
  modified[[1, 2]] = 180 - anglesDeg[[1, 2]]; (*β1*)
  modified[[1, 3]] = 180 - anglesDeg[[1, 3]]; (*γ1*)
  modified[[4, 2]] = 180 - anglesDeg[[4, 2]]; (*β4*)
  modified[[4, 3]] = 180 - anglesDeg[[4, 3]]; (*γ4*)
  modified]

SwitchingLeftBoundaryStrip[anglesDeg_List] := Module[{modified = anglesDeg},
  (*Indices:{row,column}={2,2},{2,3},{3,2},{3,3}*)
  modified[[2, 2]] = 180 - anglesDeg[[2, 2]]; (*β2*)
```

```
  modified⟦2, 3⟧ = 180 - anglesDeg⟦2, 3⟧; (*γ2*)
  modified⟦3, 2⟧ = 180 - anglesDeg⟦3, 2⟧; (*β3*)
  modified⟦3, 3⟧ = 180 - anglesDeg⟦3, 3⟧; (*γ3*)
  modified]

SwitchingLowerBoundaryStrip[anglesDeg_List] := Module[{modified = anglesDeg},
  (*Indices:{row,column}={1,1},{1,2},{2,1},{2,2}*)
  modified⟦1, 1⟧ = 180 - anglesDeg⟦1, 1⟧; (*α1*)
  modified⟦1, 2⟧ = 180 - anglesDeg⟦1, 2⟧; (*β1*)
  modified⟦2, 1⟧ = 180 - anglesDeg⟦2, 1⟧; (*α2*)
  modified⟦2, 2⟧ = 180 - anglesDeg⟦2, 2⟧; (*β2*)
  modified]

SwitchingUpperBoundaryStrip[anglesDeg_List] := Module[{modified = anglesDeg},
  (*Indices:{row,column}={3,1},{3,2},{4,1},{4,2}*)
  modified⟦3, 1⟧ = 180 - anglesDeg⟦3, 1⟧; (*α3*)
  modified⟦3, 2⟧ = 180 - anglesDeg⟦3, 2⟧; (*β3*)
  modified⟦4, 1⟧ = 180 - anglesDeg⟦4, 1⟧; (*α4*)
  modified⟦4, 2⟧ = 180 - anglesDeg⟦4, 2⟧; (*β4*)
  modified]


(*==============================================================================
 =====*)
(*=================================
   NOT CONIC====================================*)
(*==============================================================================
 =====*)
Column[{TextCell[Style["================= NOT CONIC =================",
    Pink, Bold, 16], "Text"],
  TextCell[Style["Condition (N.0) is satisfied ⇒
      this configuration is NOT equimodular-conic. Applying
      any boundary-strip switch still preserves (N.0), so
      no conic form emerges.", GrayLevel[0.3]], "Text"]
 }]

(*Now the exact same Module for checking all switch combinations…*)
Module[{angles = anglesDeg, switchers, combinations, results},
 (*Define switch functions*)
 switchers = <|"Right" → SwitchingRightBoundaryStrip,
   "Left" → SwitchingLeftBoundaryStrip, "Lower" → SwitchingLowerBoundaryStrip,
   "Upper" → SwitchingUpperBoundaryStrip|>;
 (*Generate all combinations of switches (from size 1 to 4)*)
 combinations = Subsets[Keys[switchers], {1, Length[switchers]}];
 (*Evaluate condition after each combination of switches*)results = Table[
   Module[{switched = angles, name, passQ}, name = StringRiffle[combo, " + "];
    Do[switched = switchers[sw][switched], {sw, combo}];
```

```
    passQ = And @@ (checkConditionN0Degrees /@ switched);
    (*Print the result after switching*)
    (*Print["\nSwitch combination: ",name];
    Print["Switched anglesDeg:"];
    Print[MatrixForm[switched]];*)
    {name, passQ}], {combo, combinations}];
 (*Display results*)
 Column[Prepend[Table[Module[{comboName = res⟦1⟧, passQ = res⟦2⟧},
      Row[{Style[comboName <> ": ", Bold],
        If[passQ,
         Style["Condition (N.0) is still satisfied.", Darker[Green]],
         Style["Condition (N.0) fails.", Red, Bold]
        ]
       }
      ]], {res, results}], TextCell[
    Style["CONDITION (N.0) AFTER SWITCHING BOUNDARY STRIPS", 14], "Text"]]]]


(*==========================================================================
 =====*)
(*================================
 NOT ORTHODIAGONAL===============================*)
(*==========================================================================
 =====*)
Column[
 {TextCell[Style["================= NOT ORTHODIAGONAL =================",
    Purple, Bold, 16], "Text"],
  TextCell[Style[
    "cos(αi)·cos(γi) ≠ cos(βi)·cos(δi) for each i = 1…4 ⇒ NOT orthodiagonal.
      Switching boundary strips does not
      correct this.", GrayLevel[0.3]], "Text"]
 }]

Module[{angles = anglesDeg, switchers, combinations, results},
 (*Define switch functions*)
 switchers = <|"Right" → SwitchingRightBoundaryStrip,
   "Left" → SwitchingLeftBoundaryStrip, "Lower" → SwitchingLowerBoundaryStrip,
   "Upper" → SwitchingUpperBoundaryStrip|>;
 (*Helper function:compute and print difference only*)
 formatOrthodiagonalCheck[quad_List] := Module[{vals},
   vals = Table[Module[{a, b, c, d, lhs, rhs, diff}, {a, b, c, d} = quad⟦i⟧;
      lhs = FullSimplify[Cos[a Degree] Cos[c Degree]];
      rhs = FullSimplify[Cos[b Degree] Cos[d Degree]];
      diff = Chop[lhs - rhs];
      Style[Row[{"cos(α" <> ToString[i] <> ")·cos(γ" <> ToString[i] <> ") - ",
         "cos(β" <> ToString[i] <> ")·cos(δ" <> ToString[i] <> ") = ", NumberForm[
          diff, {5, 3}]}], If[diff == 0, Red, Black]]], {i, Length[quad]}];
```

```
    Column[vals]];
  (*Orthodiagonal check for anglesDeg before any switching*)
  Print[TextCell[Style["\nInitial anglesDeg (no switches):", Bold]]];
  Print[MatrixForm[angles]];
  Print[TextCell[Style[
     "Orthodiagonal check: cos(αi)·cos(γi) - cos(βi)·cos(δi) for i = 1..4",
     Italic]]];
  Print[formatOrthodiagonalCheck[angles]];
  (*Generate all combinations of switches (from size 1 to 4)*)
  combinations = Subsets[Keys[switchers], {1, Length[switchers]}];
  (*Evaluate condition after each combination of switches*)results = Table[
    Module[{switched = angles, name, passQ}, name = StringRiffle[combo, " + "];
     Do[switched = switchers[sw][switched], {sw, combo}];
     passQ = And @@ (checkConditionN0Degrees /@ switched);
     Print[Style["\nSwitch combination: ", Bold], name];
     Print[Style["Switched anglesDeg:", Italic]];
     Print[MatrixForm[switched]];
     Print[TextCell[Style[
        "Orthodiagonal check: cos(αi)·cos(γi) - cos(βi)·cos(δi) for i = 1..4",
        Italic]]];
     Print[formatOrthodiagonalCheck[switched]];
     {name, passQ}], {combo, combinations}];]


(*==========================================================================
 =====*)
(*=================================
 NOT ISOGONAL=================================*)
(*==========================================================================
 =====*)
Column[
 {TextCell[Style["================= NOT ISOGONAL =================", Orange,
    Bold, 15], "Text"],
  TextCell[
   Style["Condition (N.0) holds AND for all i = 1…4: αi ≠ βi, αi ≠ γi, αi
      ≠ δi, βi ≠ γi, βi ≠ δi, γi ≠ δi, αi+βi ≠ π ≠ γi+δi, αi+γi
      ≠ π ≠ βi+δi, αi+δi ≠ π ≠ βi+γi ⇒ NOT isogonal. Switching
      boundary strips do not change this.", GrayLevel[0.3]], "Text"]}]

Module[{angles = anglesDeg, switchers, combinations, results},
 (*Define switch functions*)
 switchers = <|"Right" → SwitchingRightBoundaryStrip,
   "Left" → SwitchingLeftBoundaryStrip, "Lower" → SwitchingLowerBoundaryStrip,
   "Upper" → SwitchingUpperBoundaryStrip|>;
 (*Helper function:extended angle relations*)
 formatAngleRelations[quad_List] :=
  Module[{vals}, vals = Table[Module[{a, b, c, d, exprs}, {a, b, c, d} = quad〚i〛;
```

```
      exprs = {Row[{"α" <> ToString[i] <> " - β" <> ToString[i] <> " = ",
          NumberForm[N[a - b], {5, 3}]}], Row[{"α" <> ToString[i] <>
           " - γ" <> ToString[i] <> " = ", NumberForm[N[a - c], {5, 3}]}],
        Row[{"α" <> ToString[i] <> " - δ" <> ToString[i] <> " = ",
          NumberForm[N[a - d], {5, 3}]}], Row[{"β" <> ToString[i] <>
           " - γ" <> ToString[i] <> " = ", NumberForm[N[b - c], {5, 3}]}],
        Row[{"β" <> ToString[i] <> " - δ" <> ToString[i] <> " = ",
          NumberForm[N[b - d], {5, 3}]}], Row[{"γ" <> ToString[i] <>
           " - δ" <> ToString[i] <> " = ", NumberForm[N[c - d], {5, 3}]}],
        Row[{"α" <> ToString[i] <> " + β" <> ToString[i] <> " - 180 = ",
          NumberForm[N[a + b - 180], {5, 3}]}],
        Row[{"γ" <> ToString[i] <> " + δ" <> ToString[i] <> " - 180 = ",
          NumberForm[N[c + d - 180], {5, 3}]}],
        Row[{"α" <> ToString[i] <> " + γ" <> ToString[i] <> " - 180 = ",
          NumberForm[N[a + c - 180], {5, 3}]}],
        Row[{"β" <> ToString[i] <> " + δ" <> ToString[i] <> " - 180 = ",
          NumberForm[N[b + d - 180], {5, 3}]}],
        Row[{"α" <> ToString[i] <> " + δ" <> ToString[i] <> " - 180 = ",
          NumberForm[N[a + d - 180], {5, 3}]}],
        Row[{"β" <> ToString[i] <> " + γ" <> ToString[i] <> " - 180 = ",
          NumberForm[N[b + c - 180], {5, 3}]}],
        Row[{"α" <> ToString[i] <> " + β" <> ToString[i] <> " - γ" <> ToString[i] <>
           " - δ" <> ToString[i] <> " = ", NumberForm[N[a + b - c - d], {5, 3}]}],
        Row[{"α" <> ToString[i] <> " + γ" <> ToString[i] <> " - β" <> ToString[i] <>
           " - δ" <> ToString[i] <> " = ", NumberForm[N[a + c - b - d], {5, 3}]}],
        Row[{"α" <> ToString[i] <> " + δ" <> ToString[i] <> " - β" <> ToString[i] <>
           " - γ" <> ToString[i] <> " = ", NumberForm[N[a + d - b - c], {5, 3}]}]};
      Column[Prepend[exprs, Style["Vertex " <> ToString[i], Bold]]]],
     {i, Length[quad]}];
   Column[vals, Spacings → 1.5]];
 (*Angle relation check for anglesDeg before any switching*)
 Print[TextCell[Style["\nInitial anglesDeg (no switches):", Bold]]];
 Print[MatrixForm[angles]];
 Print[TextCell[Style["Angle relation checks for i = 1..4:", Italic]]];
 Print[formatAngleRelations[angles]];
 (*Generate all combinations of switches (from size 1 to 4)*)
 combinations = Subsets[Keys[switchers], {1, Length[switchers]}];
 (*Evaluate condition after each combination of switches*)results = Table[
   Module[{switched = angles, name, passQ}, name = StringRiffle[combo, " + "];
    Do[switched = switchers[sw][switched], {sw, combo}];
    passQ = And @@ (checkConditionN0Degrees /@ switched);
    Print[Style["\nSwitch combination: ", Bold], name];
    Print[Style["Switched anglesDeg:", Italic]];
    Print[MatrixForm[switched]];
    Print[TextCell[Style["Angle relation checks for i = 1..4:", Italic]]];
    Print[formatAngleRelations[switched]];
    {name, passQ}], {combo, combinations}];]
```

```
(*================================================================================
 =====*)
(*============================
   NOT CONJUGATE-MODULAR=============================*)
(*================================================================================
 =====*)
Column[
 {TextCell[Style["================= NOT CONJUGATE-MODULAR =================",
    Brown, Bold, 16], "Text"],
  TextCell[
   Style["Mi < 1 for all i = 1…4 ⇒ NOT conjugate-modular. Boundary-strip
      switches preserve this.", GrayLevel[0.3]], "Text"]
 }]


Module[{angles = anglesDeg, switchers, combinations, results,
  computeConjugateModularInfo}, (*Define switch functions*)
 switchers = <|"Right" → SwitchingRightBoundaryStrip,
   "Left" → SwitchingLeftBoundaryStrip, "Lower" → SwitchingLowerBoundaryStrip,
   "Upper" → SwitchingUpperBoundaryStrip|>;
 (*Computes Mi and pi and prints them,
 with classification*)computeConjugateModularInfo[quad_List] :=
  Module[{abcdList, Ms, summary}, abcdList = computeABCD /@ quad;
   Ms = FullSimplify[Times @@@ abcdList];
   summary = If[AllTrue[Ms, # < 1 &], Style["Mi < 1 for all i = 1, ..., 4",
      Bold], Style["Mi ≥ 1 for some i = 1, ..., 4", Red, Bold]];
   Column[{Style["Mi values:", Bold], Row[{"M1 = ", Ms[[1]], ", M2 = ",
       Ms[[2]], ", M3 = ", Ms[[3]], ", M4 = ", Ms[[4]]}], summary}]];
 (*Original anglesDeg check*)
 Print[
  TextCell[Style["\nInitial configuration (no switches applied):", Bold]]];
 Print[MatrixForm[angles]];
 Print[computeConjugateModularInfo[angles]];
 (*Generate all switch combinations (from size 1 to 4)*)
 combinations = Subsets[Keys[switchers], {1, Length[switchers]}];
 (*Evaluate each switched configuration*)results = Table[
   Module[{switched = angles, name, passQ}, name = StringRiffle[combo, " + "];
    Do[switched = switchers[sw][switched], {sw, combo}];
    passQ = And @@ (checkConditionN0Degrees /@ switched);
    Print[Style["\nSwitch combination: ", Bold], name];
    Print[Style["Switched anglesDeg:", Italic]];
    Print[MatrixForm[switched]];
    Print[computeConjugateModularInfo[switched]];
    {name, passQ}], {combo, combinations}];]
```

```
(*==========================================================================
 =====*)
(*==================================
 NOT CHIMERA=================================*)
(*==========================================================================
 =====*)
Column[
 {TextCell[Style["================= NOT CHIMERA =================", Blue,
    Bold, 16], "Text"],
  TextCell[
   Style["Fails conic, orthodiagonal & isogonal tests for all i=1, ...,
      4 ⇒ NOT chimera. Boundary-strip switches preserve these
      failures as demonstrated in the NOT CONIC, NOT ORTHODIAGONAL,
      and NOT ISOGONAL sections.", GrayLevel[0.3]], "Text"]
}]
```

Out[1789]=

================= CONDITION (N.0) =================

✔ All vertices satisfy (N.0).

Out[1792]=

================= CONDITION (N.3) =================

✔ M1 = M2 = M3 = M4 = $\frac{1}{2}$

Out[1798]=

================= CONDITION (N.4) =================

✔ r1 = r2 = $\frac{4}{3}$**; ✔ r3 = r4 =** $\frac{5}{2}$

✔ s1 = s4 = 3**; ✔ s2 = s3 =** $\frac{11}{6}$

Out[1808]=

================= CONDITION (N.5) =================

⚠ *Approximate validation using ε-tolerance. For rigorous proof, see the referenced paper.*

✅ **Valid Combination Found (M < 1):**

e1 = 1, **e2** = 1, **e3** = 1

t1 = 0.K + 0.554485iK'

t2 = 0.K + 0.509302iK'

t3 = 0.K + 0.490698iK'

t4 = 0.K + 0.445515iK'

t1 + e1*t2 + e2*t3 + e3*t4 = 0.K + 2.iK'

Out[1811]=

================== OTHER PARAMETERS ==================

$\mathbf{u} = \frac{1}{2}$

$\sigma\mathbf{1} = 135\,°$, $\sigma\mathbf{2} = °\left(135 + \frac{90\,\text{ArcCos}\left[\frac{15\sqrt{7}}{44}\right]}{\pi}\right)$, $\sigma\mathbf{3} = \frac{90\,°\left(\pi + \text{ArcTan}\left[\frac{4\sqrt{7}}{3}\right]\right)}{\pi}$, $\sigma\mathbf{4} = °\left(135 - \frac{45\,\text{ArcTan}\left[\frac{24}{7}\right]}{\pi}\right)$

$\sigma\mathbf{1} \approx 135.°$, $\sigma\mathbf{2} \approx 147.792°$, $\sigma\mathbf{3} \approx 127.087°$, $\sigma\mathbf{4} \approx 116.565°$

$\cos\sigma\mathbf{1} = -\frac{1}{\sqrt{2}}$, $\cos\sigma\mathbf{2} = -\frac{3\sqrt{\frac{7}{22}}}{2}$, $\cos\sigma\mathbf{3} = -\frac{2}{\sqrt{11}}$, $\cos\sigma\mathbf{4} = -\frac{1}{\sqrt{5}}$

$\mathbf{f1} = 2$, $\mathbf{f2} = \frac{7}{4}$, $\mathbf{f3} = \frac{5}{3}$, $\mathbf{f4} = \frac{3}{2}$

$\mathbf{z1} = 1$, $\mathbf{z2} = \frac{4}{3}$, $\mathbf{z3} = \frac{3}{2}$, $\mathbf{z4} = 2$

$\mathbf{x1} = 3$, $\mathbf{x2} = 3$, $\mathbf{x3} = \frac{2}{3}$, $\mathbf{x4} = \frac{2}{3}$

$\mathbf{y1} = \frac{1}{2}$, $\mathbf{y2} = \frac{6}{5}$, $\mathbf{y3} = \frac{6}{5}$, $\mathbf{y4} = \frac{1}{2}$

$\mathbf{p1} = \frac{1}{\sqrt{3}}$, $\mathbf{p2} = \frac{1}{\sqrt{3}}$, $\mathbf{p3} = \sqrt{\frac{3}{2}}$, $\mathbf{p4} = \sqrt{\frac{3}{2}}$

$\mathbf{q1} = \sqrt{2}$, $\mathbf{q2} = \sqrt{\frac{5}{6}}$, $\mathbf{q3} = \sqrt{\frac{5}{6}}$, $\mathbf{q4} = \sqrt{2}$

$\mathbf{p1}\cdot\mathbf{q1} = \sqrt{\frac{2}{3}}$, $\mathbf{p2}\cdot\mathbf{q2} = \frac{\sqrt{\frac{5}{2}}}{3}$, $\mathbf{p3}\cdot\mathbf{q3} = \frac{\sqrt{5}}{2}$, $\mathbf{p4}\cdot\mathbf{q4} = \sqrt{3}$

Out[1817]=

================== FLEXIBILITY (FLEXION 1) ==================

$P_1[Z, W1] = 0$

$P_2[Z, W2] = 0$

$P_3[U, W2] = 0$

$P_4[U, W1] = 0$

Out[1825]=

================== FLEXIBILITY (FLEXION 2) ==================

$P_1[Z, W1] = 0$

$P_2[Z, W2] = 0$

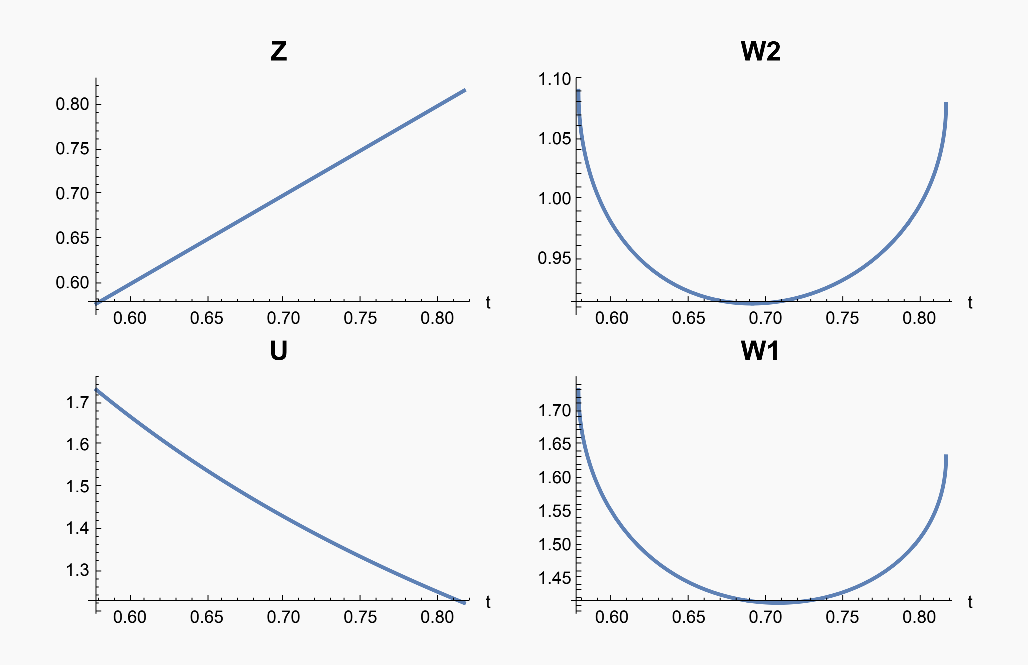
$P_3[U, W2] = 0$

$P_4[U, W1] = 0$

Out[1832]=

================= **NOT TRIVIAL (FLEXION 1)** =================

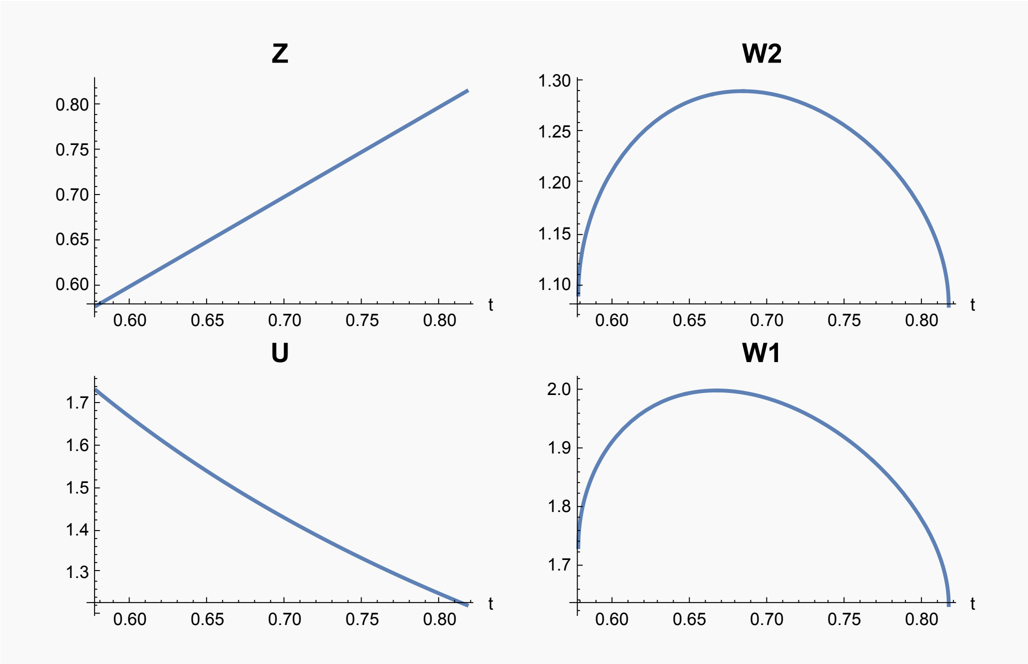
This configuration does not belong to the trivial class — even after switching the boundary strips — since none of the functions Z, W2, U, or W1 is constant.



Out[1835]=

================= NOT TRIVIAL (FLEXION 2) =================

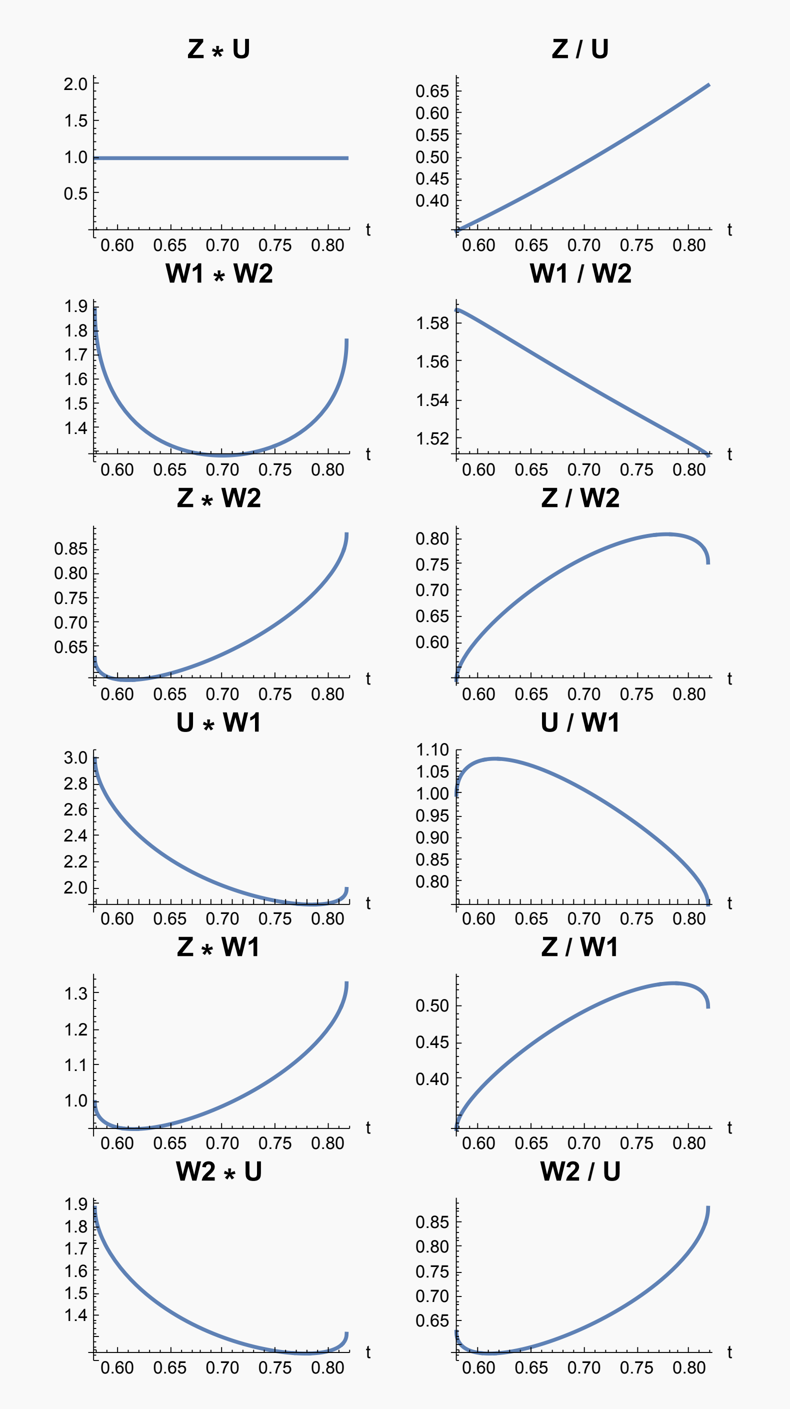
This configuration does not belong to the trivial class — even after switching the boundary strips — since none of the functions Z, W2, U, or W1 is constant.



Out[1840]=

============= NOT LINEAR COMPOUND & NOT LINEAR CONJUGATE (FLEXION 1) =============

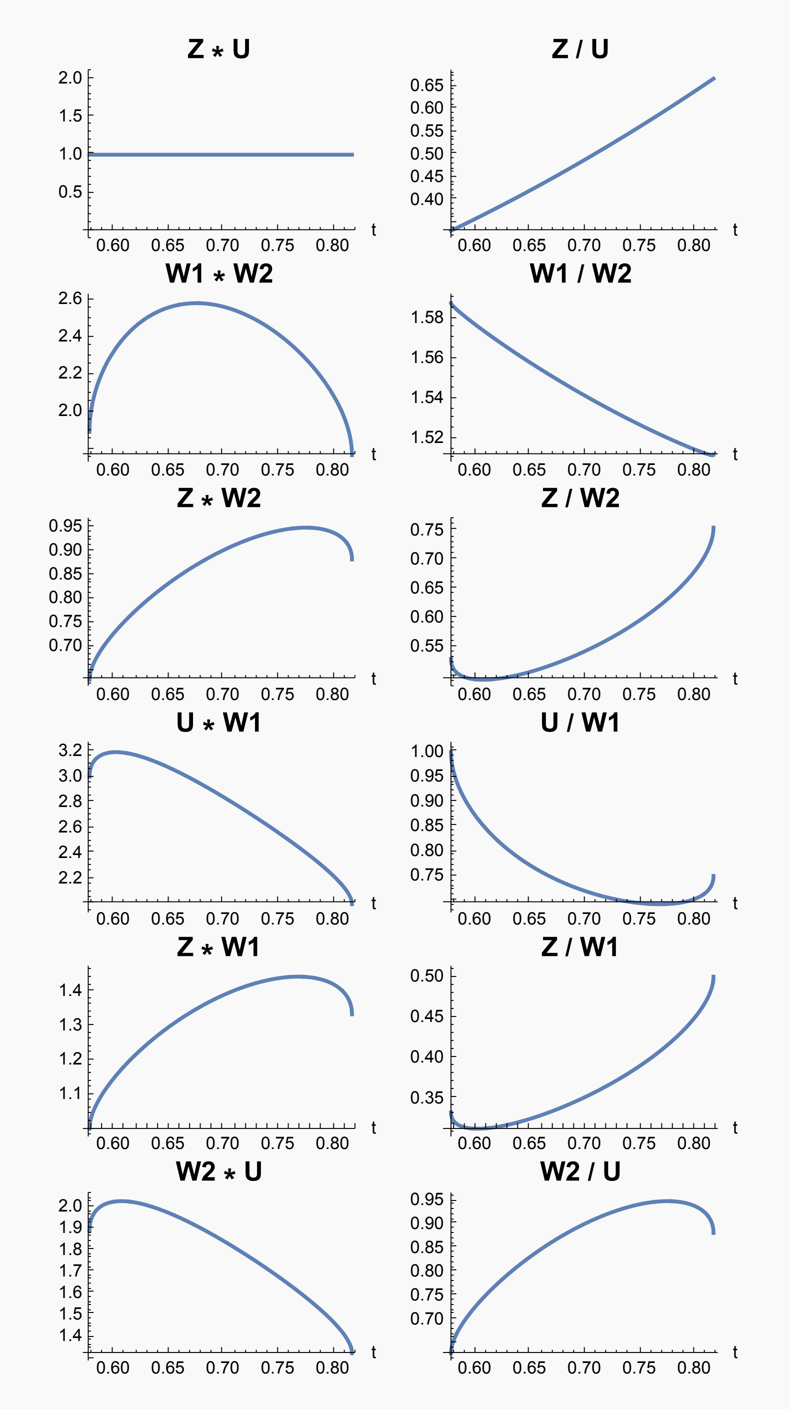
This configuration does not belong to the Linear compound class nor to the linear conjugate class — even after switching the boundary strips — since none of the functions ZU, Z/U, W1W2, W1/W2, ZW2, Z/W2, UW1, and U/W1 is constant. In addition, none of ZW1, Z/W1, W2U, W2/U is constant as well.



Out[1843]=

============= NOT LINEAR COMPOUND & NOT LINEAR CONJUGATE (FLEXION 2) =============

This configuration does not belong to the Linear compound class nor to the linear conjugate class — even after switching the boundary strips — since none of the functions ZU, Z/U, W1W2, W1/W2, ZW2, Z/W2, UW1, and U/W1 is constant. In addition, none of ZW1, Z/W1, W2U, W2/U is constant as well.



Out[1848]=

================= NOT CONIC =================

Condition (N.0) is satisfied ⇒ this configuration
is NOT equimodular-conic. Applying any boundary-strip
switch still preserves (N.0), so no conic form emerges.

Out[1849]=

CONDITION (N.0) AFTER SWITCHING BOUNDARY STRIPS
Right: Condition (N.0) is still satisfied.
Left: Condition (N.0) is still satisfied.
Lower: Condition (N.0) is still satisfied.
Upper: Condition (N.0) is still satisfied.
Right + Left: Condition (N.0) is still satisfied.
Right + Lower: Condition (N.0) is still satisfied.
Right + Upper: Condition (N.0) is still satisfied.
Left + Lower: Condition (N.0) is still satisfied.
Left + Upper: Condition (N.0) is still satisfied.
Lower + Upper: Condition (N.0) is still satisfied.
Right + Left + Lower: Condition (N.0) is still satisfied.
Right + Left + Upper: Condition (N.0) is still satisfied.
Right + Lower + Upper: Condition (N.0) is still satisfied.
Left + Lower + Upper: Condition (N.0) is still satisfied.
Right + Left + Lower + Upper: Condition (N.0) is still satisfied.

Out[1850]=

================= NOT ORTHODIAGONAL =================

$\cos(\alpha_i)\cdot\cos(\gamma_i) \neq \cos(\beta_i)\cdot\cos(\delta_i)$ for each $i = 1 \ldots 4$ ⇒ NOT
orthodiagonal. Switching boundary strips does not correct this.

Initial anglesDeg (no switches):

$$\begin{pmatrix} \frac{180\,\mathrm{ArcCos}\left[\frac{1}{\sqrt{5}}\right]}{\pi} & \frac{180\,\mathrm{ArcCos}\left[\frac{7}{5\sqrt{2}}\right]}{\pi} & \frac{180\,\mathrm{ArcCos}\left[-\frac{1}{\sqrt{10}}\right]}{\pi} & 90 \\ \frac{180\,\mathrm{ArcCos}\left[\frac{1}{4\sqrt{11}}\right]}{\pi} & \frac{180\,\mathrm{ArcCos}\left[\frac{7\sqrt{\frac{7}{22}}}{4}\right]}{\pi} & \frac{180\,\mathrm{ArcCos}\left[-\frac{1}{2\sqrt{2}}\right]}{\pi} & 90 \\ \frac{180\,\mathrm{ArcCos}\left[\frac{1}{4\sqrt{11}}\right]}{\pi} & \frac{180\,\mathrm{ArcCos}\left[\frac{7\sqrt{\frac{7}{22}}}{4}\right]}{\pi} & \frac{180\,\mathrm{ArcCos}\left[\frac{1}{2\sqrt{2}}\right]}{\pi} & 90 \\ \frac{180\,\mathrm{ArcCos}\left[\frac{1}{\sqrt{5}}\right]}{\pi} & \frac{180\,\mathrm{ArcCos}\left[\frac{7}{5\sqrt{2}}\right]}{\pi} & \frac{180\,\mathrm{ArcCos}\left[\frac{1}{\sqrt{10}}\right]}{\pi} & 90 \end{pmatrix}$$

Orthodiagonal check: $\cos(\alpha_i)\cdot\cos(\gamma_i) - \cos(\beta_i)\cdot\cos(\delta_i)$ *for* $i = 1..4$

$$\cos(\alpha 1)\cdot\cos(\gamma 1) - \cos(\beta 1)\cdot\cos(\delta 1) = -\frac{1}{5\sqrt{2}}$$

$$\cos(\alpha 2)\cdot\cos(\gamma 2) - \cos(\beta 2)\cdot\cos(\delta 2) = -\frac{1}{8\sqrt{22}}$$

$$\cos(\alpha 3)\cdot\cos(\gamma 3) - \cos(\beta 3)\cdot\cos(\delta 3) = \frac{1}{8\sqrt{22}}$$

$$\cos(\alpha 4)\cdot\cos(\gamma 4) - \cos(\beta 4)\cdot\cos(\delta 4) = \frac{1}{5\sqrt{2}}$$

Switch combination: Right

Switched anglesDeg:

$$\begin{pmatrix} \frac{180\,\text{ArcCos}\left[\frac{1}{\sqrt{5}}\right]}{\pi} & 180-\frac{180\,\text{ArcCos}\left[\frac{7}{5\sqrt{2}}\right]}{\pi} & 180-\frac{180\,\text{ArcCos}\left[-\frac{1}{\sqrt{10}}\right]}{\pi} & 90 \\ \frac{180\,\text{ArcCos}\left[\frac{1}{4\sqrt{11}}\right]}{\pi} & \frac{180\,\text{ArcCos}\left[\frac{7\sqrt{\frac{7}{22}}}{4}\right]}{\pi} & \frac{180\,\text{ArcCos}\left[-\frac{1}{2\sqrt{2}}\right]}{\pi} & 90 \\ \frac{180\,\text{ArcCos}\left[\frac{1}{4\sqrt{11}}\right]}{\pi} & \frac{180\,\text{ArcCos}\left[\frac{7\sqrt{\frac{7}{22}}}{4}\right]}{\pi} & \frac{180\,\text{ArcCos}\left[\frac{1}{2\sqrt{2}}\right]}{\pi} & 90 \\ \frac{180\,\text{ArcCos}\left[\frac{1}{\sqrt{5}}\right]}{\pi} & 180-\frac{180\,\text{ArcCos}\left[\frac{7}{5\sqrt{2}}\right]}{\pi} & 180-\frac{180\,\text{ArcCos}\left[\frac{1}{\sqrt{10}}\right]}{\pi} & 90 \end{pmatrix}$$

Orthodiagonal check: $\cos(\alpha_i)\cdot\cos(\gamma_i) - \cos(\beta_i)\cdot\cos(\delta_i)$ *for* $i = 1..4$

$\cos(\alpha 1)\cdot\cos(\gamma 1) - \cos(\beta 1)\cdot\cos(\delta 1) = \frac{1}{5\sqrt{2}}$

$\cos(\alpha 2)\cdot\cos(\gamma 2) - \cos(\beta 2)\cdot\cos(\delta 2) = -\frac{1}{8\sqrt{22}}$

$\cos(\alpha 3)\cdot\cos(\gamma 3) - \cos(\beta 3)\cdot\cos(\delta 3) = \frac{1}{8\sqrt{22}}$

$\cos(\alpha 4)\cdot\cos(\gamma 4) - \cos(\beta 4)\cdot\cos(\delta 4) = -\frac{1}{5\sqrt{2}}$

Switch combination: Left

Switched anglesDeg:

$$\begin{pmatrix} \frac{180\,\text{ArcCos}\left[\frac{1}{\sqrt{5}}\right]}{\pi} & \frac{180\,\text{ArcCos}\left[\frac{7}{5\sqrt{2}}\right]}{\pi} & \frac{180\,\text{ArcCos}\left[-\frac{1}{\sqrt{10}}\right]}{\pi} & 90 \\ \frac{180\,\text{ArcCos}\left[\frac{1}{4\sqrt{11}}\right]}{\pi} & 180-\frac{180\,\text{ArcCos}\left[\frac{7\sqrt{\frac{7}{22}}}{4}\right]}{\pi} & 180-\frac{180\,\text{ArcCos}\left[-\frac{1}{2\sqrt{2}}\right]}{\pi} & 90 \\ \frac{180\,\text{ArcCos}\left[\frac{1}{4\sqrt{11}}\right]}{\pi} & 180-\frac{180\,\text{ArcCos}\left[\frac{7\sqrt{\frac{7}{22}}}{4}\right]}{\pi} & 180-\frac{180\,\text{ArcCos}\left[\frac{1}{2\sqrt{2}}\right]}{\pi} & 90 \\ \frac{180\,\text{ArcCos}\left[\frac{1}{\sqrt{5}}\right]}{\pi} & \frac{180\,\text{ArcCos}\left[\frac{7}{5\sqrt{2}}\right]}{\pi} & \frac{180\,\text{ArcCos}\left[\frac{1}{\sqrt{10}}\right]}{\pi} & 90 \end{pmatrix}$$

Orthodiagonal check: $\cos(\alpha_i)\cdot\cos(\gamma_i) - \cos(\beta_i)\cdot\cos(\delta_i)$ *for* $i = 1..4$

$\cos(\alpha 1)\cdot\cos(\gamma 1) - \cos(\beta 1)\cdot\cos(\delta 1) = -\frac{1}{5\sqrt{2}}$

$\cos(\alpha 2)\cdot\cos(\gamma 2) - \cos(\beta 2)\cdot\cos(\delta 2) = \frac{1}{8\sqrt{22}}$

$\cos(\alpha 3)\cdot\cos(\gamma 3) - \cos(\beta 3)\cdot\cos(\delta 3) = -\frac{1}{8\sqrt{22}}$

$\cos(\alpha 4)\cdot\cos(\gamma 4) - \cos(\beta 4)\cdot\cos(\delta 4) = \frac{1}{5\sqrt{2}}$

Switch combination: Lower

Switched anglesDeg:

$$\begin{pmatrix} 180-\frac{180\,\text{ArcCos}\left[\frac{1}{\sqrt{5}}\right]}{\pi} & 180-\frac{180\,\text{ArcCos}\left[\frac{7}{5\sqrt{2}}\right]}{\pi} & \frac{180\,\text{ArcCos}\left[-\frac{1}{\sqrt{10}}\right]}{\pi} & 90 \\ 180-\frac{180\,\text{ArcCos}\left[\frac{1}{4\sqrt{11}}\right]}{\pi} & 180-\frac{180\,\text{ArcCos}\left[\frac{7\sqrt{\frac{7}{22}}}{4}\right]}{\pi} & \frac{180\,\text{ArcCos}\left[-\frac{1}{2\sqrt{2}}\right]}{\pi} & 90 \\ \frac{180\,\text{ArcCos}\left[\frac{1}{4\sqrt{11}}\right]}{\pi} & \frac{180\,\text{ArcCos}\left[\frac{7\sqrt{\frac{7}{22}}}{4}\right]}{\pi} & \frac{180\,\text{ArcCos}\left[\frac{1}{2\sqrt{2}}\right]}{\pi} & 90 \\ \frac{180\,\text{ArcCos}\left[\frac{1}{\sqrt{5}}\right]}{\pi} & \frac{180\,\text{ArcCos}\left[\frac{7}{5\sqrt{2}}\right]}{\pi} & \frac{180\,\text{ArcCos}\left[\frac{1}{\sqrt{10}}\right]}{\pi} & 90 \end{pmatrix}$$

Orthodiagonal check: $\cos(\alpha_i)\cdot\cos(\gamma_i) - \cos(\beta_i)\cdot\cos(\delta_i)$ *for* $i = 1..4$

$\cos(\alpha 1)\cdot\cos(\gamma 1) - \cos(\beta 1)\cdot\cos(\delta 1) = \frac{1}{5\sqrt{2}}$

$\cos(\alpha 2)\cdot\cos(\gamma 2) - \cos(\beta 2)\cdot\cos(\delta 2) = \frac{1}{8\sqrt{22}}$

$\cos(\alpha 3)\cdot\cos(\gamma 3) - \cos(\beta 3)\cdot\cos(\delta 3) = \frac{1}{8\sqrt{22}}$

$\cos(\alpha 4)\cdot\cos(\gamma 4) - \cos(\beta 4)\cdot\cos(\delta 4) = \frac{1}{5\sqrt{2}}$

Switch combination: Upper

Switched anglesDeg:

$$\begin{pmatrix} \frac{180\,\text{ArcCos}\left[\frac{1}{\sqrt{5}}\right]}{\pi} & \frac{180\,\text{ArcCos}\left[\frac{7}{5\sqrt{2}}\right]}{\pi} & \frac{180\,\text{ArcCos}\left[-\frac{1}{\sqrt{10}}\right]}{\pi} & 90 \\ \frac{180\,\text{ArcCos}\left[\frac{1}{4\sqrt{11}}\right]}{\pi} & \frac{180\,\text{ArcCos}\left[\frac{7\sqrt{\frac{7}{22}}}{4}\right]}{\pi} & \frac{180\,\text{ArcCos}\left[-\frac{1}{2\sqrt{2}}\right]}{\pi} & 90 \\ 180-\frac{180\,\text{ArcCos}\left[\frac{1}{4\sqrt{11}}\right]}{\pi} & 180-\frac{180\,\text{ArcCos}\left[\frac{7\sqrt{\frac{7}{22}}}{4}\right]}{\pi} & \frac{180\,\text{ArcCos}\left[\frac{1}{2\sqrt{2}}\right]}{\pi} & 90 \\ 180-\frac{180\,\text{ArcCos}\left[\frac{1}{\sqrt{5}}\right]}{\pi} & 180-\frac{180\,\text{ArcCos}\left[\frac{7}{5\sqrt{2}}\right]}{\pi} & \frac{180\,\text{ArcCos}\left[\frac{1}{\sqrt{10}}\right]}{\pi} & 90 \end{pmatrix}$$

Orthodiagonal check: $\cos(\alpha_i)\cdot\cos(\gamma_i) - \cos(\beta_i)\cdot\cos(\delta_i)$ *for* $i = 1..4$

$\cos(\alpha 1)\cdot\cos(\gamma 1) - \cos(\beta 1)\cdot\cos(\delta 1) = -\frac{1}{5\sqrt{2}}$

$\cos(\alpha 2)\cdot\cos(\gamma 2) - \cos(\beta 2)\cdot\cos(\delta 2) = -\frac{1}{8\sqrt{22}}$

$\cos(\alpha 3)\cdot\cos(\gamma 3) - \cos(\beta 3)\cdot\cos(\delta 3) = -\frac{1}{8\sqrt{22}}$

$\cos(\alpha 4)\cdot\cos(\gamma 4) - \cos(\beta 4)\cdot\cos(\delta 4) = -\frac{1}{5\sqrt{2}}$

Switch combination: Right + Left

Switched anglesDeg:

$$\begin{pmatrix} \frac{180\,\text{ArcCos}\left[\frac{1}{\sqrt{5}}\right]}{\pi} & 180-\frac{180\,\text{ArcCos}\left[\frac{7}{5\sqrt{2}}\right]}{\pi} & 180-\frac{180\,\text{ArcCos}\left[-\frac{1}{\sqrt{10}}\right]}{\pi} & 90 \\ \frac{180\,\text{ArcCos}\left[\frac{1}{4\sqrt{11}}\right]}{\pi} & 180-\frac{180\,\text{ArcCos}\left[\frac{7\sqrt{\frac{7}{22}}}{4}\right]}{\pi} & 180-\frac{180\,\text{ArcCos}\left[-\frac{1}{2\sqrt{2}}\right]}{\pi} & 90 \\ \frac{180\,\text{ArcCos}\left[\frac{1}{4\sqrt{11}}\right]}{\pi} & 180-\frac{180\,\text{ArcCos}\left[\frac{7\sqrt{\frac{7}{22}}}{4}\right]}{\pi} & 180-\frac{180\,\text{ArcCos}\left[\frac{1}{2\sqrt{2}}\right]}{\pi} & 90 \\ \frac{180\,\text{ArcCos}\left[\frac{1}{\sqrt{5}}\right]}{\pi} & 180-\frac{180\,\text{ArcCos}\left[\frac{7}{5\sqrt{2}}\right]}{\pi} & 180-\frac{180\,\text{ArcCos}\left[\frac{1}{\sqrt{10}}\right]}{\pi} & 90 \end{pmatrix}$$

Orthodiagonal check: $\cos(\alpha_i)\cdot\cos(\gamma_i) - \cos(\beta_i)\cdot\cos(\delta_i)$ *for* $i = 1..4$

$\cos(\alpha 1)\cdot\cos(\gamma 1) - \cos(\beta 1)\cdot\cos(\delta 1) = \frac{1}{5\sqrt{2}}$

$\cos(\alpha 2)\cdot\cos(\gamma 2) - \cos(\beta 2)\cdot\cos(\delta 2) = \frac{1}{8\sqrt{22}}$

$\cos(\alpha 3)\cdot\cos(\gamma 3) - \cos(\beta 3)\cdot\cos(\delta 3) = -\frac{1}{8\sqrt{22}}$

$\cos(\alpha 4)\cdot\cos(\gamma 4) - \cos(\beta 4)\cdot\cos(\delta 4) = -\frac{1}{5\sqrt{2}}$

Switch combination: Right + Lower

Switched anglesDeg:

$$\begin{pmatrix} 180-\frac{180\,\text{ArcCos}\left[\frac{1}{\sqrt{5}}\right]}{\pi} & \frac{180\,\text{ArcCos}\left[\frac{7}{5\sqrt{2}}\right]}{\pi} & 180-\frac{180\,\text{ArcCos}\left[-\frac{1}{\sqrt{10}}\right]}{\pi} & 90 \\ 180-\frac{180\,\text{ArcCos}\left[\frac{1}{4\sqrt{11}}\right]}{\pi} & 180-\frac{180\,\text{ArcCos}\left[\frac{7\sqrt{\frac{7}{22}}}{4}\right]}{\pi} & \frac{180\,\text{ArcCos}\left[-\frac{1}{2\sqrt{2}}\right]}{\pi} & 90 \\ \frac{180\,\text{ArcCos}\left[\frac{1}{4\sqrt{11}}\right]}{\pi} & \frac{180\,\text{ArcCos}\left[\frac{7\sqrt{\frac{7}{22}}}{4}\right]}{\pi} & \frac{180\,\text{ArcCos}\left[\frac{1}{2\sqrt{2}}\right]}{\pi} & 90 \\ \frac{180\,\text{ArcCos}\left[\frac{1}{\sqrt{5}}\right]}{\pi} & 180-\frac{180\,\text{ArcCos}\left[\frac{7}{5\sqrt{2}}\right]}{\pi} & 180-\frac{180\,\text{ArcCos}\left[\frac{1}{\sqrt{10}}\right]}{\pi} & 90 \end{pmatrix}$$

Orthodiagonal check: $\cos(\alpha_i)\cdot\cos(\gamma_i) - \cos(\beta_i)\cdot\cos(\delta_i)$ *for* $i = 1..4$

$\cos(\alpha 1)\cdot\cos(\gamma 1) - \cos(\beta 1)\cdot\cos(\delta 1) = -\frac{1}{5\sqrt{2}}$

$\cos(\alpha 2)\cdot\cos(\gamma 2) - \cos(\beta 2)\cdot\cos(\delta 2) = \frac{1}{8\sqrt{22}}$

$\cos(\alpha 3)\cdot\cos(\gamma 3) - \cos(\beta 3)\cdot\cos(\delta 3) = \frac{1}{8\sqrt{22}}$

$\cos(\alpha 4)\cdot\cos(\gamma 4) - \cos(\beta 4)\cdot\cos(\delta 4) = -\frac{1}{5\sqrt{2}}$

Switch combination: Right + Upper

Switched anglesDeg:

$$\begin{pmatrix} \frac{180\,\text{ArcCos}\left[\frac{1}{\sqrt{5}}\right]}{\pi} & 180-\frac{180\,\text{ArcCos}\left[\frac{7}{5\sqrt{2}}\right]}{\pi} & 180-\frac{180\,\text{ArcCos}\left[-\frac{1}{\sqrt{10}}\right]}{\pi} & 90 \\ \frac{180\,\text{ArcCos}\left[\frac{1}{4\sqrt{11}}\right]}{\pi} & \frac{180\,\text{ArcCos}\left[\frac{7\sqrt{\frac{7}{22}}}{4}\right]}{\pi} & \frac{180\,\text{ArcCos}\left[-\frac{1}{2\sqrt{2}}\right]}{\pi} & 90 \\ 180-\frac{180\,\text{ArcCos}\left[\frac{1}{4\sqrt{11}}\right]}{\pi} & 180-\frac{180\,\text{ArcCos}\left[\frac{7\sqrt{\frac{7}{22}}}{4}\right]}{\pi} & \frac{180\,\text{ArcCos}\left[\frac{1}{2\sqrt{2}}\right]}{\pi} & 90 \\ 180-\frac{180\,\text{ArcCos}\left[\frac{1}{\sqrt{5}}\right]}{\pi} & \frac{180\,\text{ArcCos}\left[\frac{7}{5\sqrt{2}}\right]}{\pi} & 180-\frac{180\,\text{ArcCos}\left[\frac{1}{\sqrt{10}}\right]}{\pi} & 90 \end{pmatrix}$$

Orthodiagonal check: $\cos(\alpha_i)\cdot\cos(\gamma_i) - \cos(\beta_i)\cdot\cos(\delta_i)$ *for* $i = 1..4$

$\cos(\alpha 1)\cdot\cos(\gamma 1) - \cos(\beta 1)\cdot\cos(\delta 1) = \frac{1}{5\sqrt{2}}$

$\cos(\alpha 2)\cdot\cos(\gamma 2) - \cos(\beta 2)\cdot\cos(\delta 2) = -\frac{1}{8\sqrt{22}}$

$\cos(\alpha 3)\cdot\cos(\gamma 3) - \cos(\beta 3)\cdot\cos(\delta 3) = -\frac{1}{8\sqrt{22}}$

$\cos(\alpha 4)\cdot\cos(\gamma 4) - \cos(\beta 4)\cdot\cos(\delta 4) = \frac{1}{5\sqrt{2}}$

Switch combination: Left + Lower

Switched anglesDeg:

$$\begin{pmatrix} 180-\frac{180\,\text{ArcCos}\left[\frac{1}{\sqrt{5}}\right]}{\pi} & 180-\frac{180\,\text{ArcCos}\left[\frac{7}{5\sqrt{2}}\right]}{\pi} & \frac{180\,\text{ArcCos}\left[-\frac{1}{\sqrt{10}}\right]}{\pi} & 90 \\ 180-\frac{180\,\text{ArcCos}\left[\frac{1}{4\sqrt{11}}\right]}{\pi} & \frac{180\,\text{ArcCos}\left[\frac{7\sqrt{\frac{7}{22}}}{4}\right]}{\pi} & 180-\frac{180\,\text{ArcCos}\left[-\frac{1}{2\sqrt{2}}\right]}{\pi} & 90 \\ \frac{180\,\text{ArcCos}\left[\frac{1}{4\sqrt{11}}\right]}{\pi} & 180-\frac{180\,\text{ArcCos}\left[\frac{7\sqrt{\frac{7}{22}}}{4}\right]}{\pi} & 180-\frac{180\,\text{ArcCos}\left[\frac{1}{2\sqrt{2}}\right]}{\pi} & 90 \\ \frac{180\,\text{ArcCos}\left[\frac{1}{\sqrt{5}}\right]}{\pi} & \frac{180\,\text{ArcCos}\left[\frac{7}{5\sqrt{2}}\right]}{\pi} & \frac{180\,\text{ArcCos}\left[\frac{1}{\sqrt{10}}\right]}{\pi} & 90 \end{pmatrix}$$

Orthodiagonal check: $\cos(\alpha_i)\cdot\cos(\gamma_i) - \cos(\beta_i)\cdot\cos(\delta_i)$ *for* $i = 1..4$

$\cos(\alpha 1)\cdot\cos(\gamma 1) - \cos(\beta 1)\cdot\cos(\delta 1) = \frac{1}{5\sqrt{2}}$

$\cos(\alpha 2)\cdot\cos(\gamma 2) - \cos(\beta 2)\cdot\cos(\delta 2) = -\frac{1}{8\sqrt{22}}$

$\cos(\alpha 3)\cdot\cos(\gamma 3) - \cos(\beta 3)\cdot\cos(\delta 3) = -\frac{1}{8\sqrt{22}}$

$\cos(\alpha 4)\cdot\cos(\gamma 4) - \cos(\beta 4)\cdot\cos(\delta 4) = \frac{1}{5\sqrt{2}}$

Switch combination: Left + Upper

Switched anglesDeg:

$$\begin{pmatrix} \frac{180\,\text{ArcCos}\left[\frac{1}{\sqrt{5}}\right]}{\pi} & \frac{180\,\text{ArcCos}\left[\frac{7}{5\sqrt{2}}\right]}{\pi} & \frac{180\,\text{ArcCos}\left[-\frac{1}{\sqrt{10}}\right]}{\pi} & 90 \\ \frac{180\,\text{ArcCos}\left[\frac{1}{4\sqrt{11}}\right]}{\pi} & 180-\frac{180\,\text{ArcCos}\left[\frac{7\sqrt{\frac{7}{22}}}{4}\right]}{\pi} & 180-\frac{180\,\text{ArcCos}\left[-\frac{1}{2\sqrt{2}}\right]}{\pi} & 90 \\ 180-\frac{180\,\text{ArcCos}\left[\frac{1}{4\sqrt{11}}\right]}{\pi} & \frac{180\,\text{ArcCos}\left[\frac{7\sqrt{\frac{7}{22}}}{4}\right]}{\pi} & 180-\frac{180\,\text{ArcCos}\left[\frac{1}{2\sqrt{2}}\right]}{\pi} & 90 \\ 180-\frac{180\,\text{ArcCos}\left[\frac{1}{\sqrt{5}}\right]}{\pi} & 180-\frac{180\,\text{ArcCos}\left[\frac{7}{5\sqrt{2}}\right]}{\pi} & \frac{180\,\text{ArcCos}\left[\frac{1}{\sqrt{10}}\right]}{\pi} & 90 \end{pmatrix}$$

Orthodiagonal check: $\cos(\alpha_i)\cdot\cos(\gamma_i) - \cos(\beta_i)\cdot\cos(\delta_i)$ *for* $i = 1..4$

$\cos(\alpha 1)\cdot\cos(\gamma 1) - \cos(\beta 1)\cdot\cos(\delta 1) = -\frac{1}{5\sqrt{2}}$

$\cos(\alpha 2)\cdot\cos(\gamma 2) - \cos(\beta 2)\cdot\cos(\delta 2) = \frac{1}{8\sqrt{22}}$

$\cos(\alpha 3)\cdot\cos(\gamma 3) - \cos(\beta 3)\cdot\cos(\delta 3) = \frac{1}{8\sqrt{22}}$

$\cos(\alpha 4)\cdot\cos(\gamma 4) - \cos(\beta 4)\cdot\cos(\delta 4) = -\frac{1}{5\sqrt{2}}$

Switch combination: Lower + Upper

Switched anglesDeg:

$$\begin{pmatrix} 180-\frac{180\,\text{ArcCos}\left[\frac{1}{\sqrt{5}}\right]}{\pi} & 180-\frac{180\,\text{ArcCos}\left[\frac{7}{5\sqrt{2}}\right]}{\pi} & \frac{180\,\text{ArcCos}\left[-\frac{1}{\sqrt{10}}\right]}{\pi} & 90 \\ 180-\frac{180\,\text{ArcCos}\left[\frac{1}{4\sqrt{11}}\right]}{\pi} & 180-\frac{180\,\text{ArcCos}\left[\frac{7\sqrt{\frac{7}{22}}}{4}\right]}{\pi} & \frac{180\,\text{ArcCos}\left[-\frac{1}{2\sqrt{2}}\right]}{\pi} & 90 \\ 180-\frac{180\,\text{ArcCos}\left[\frac{1}{4\sqrt{11}}\right]}{\pi} & 180-\frac{180\,\text{ArcCos}\left[\frac{7\sqrt{\frac{7}{22}}}{4}\right]}{\pi} & \frac{180\,\text{ArcCos}\left[\frac{1}{2\sqrt{2}}\right]}{\pi} & 90 \\ 180-\frac{180\,\text{ArcCos}\left[\frac{1}{\sqrt{5}}\right]}{\pi} & 180-\frac{180\,\text{ArcCos}\left[\frac{7}{5\sqrt{2}}\right]}{\pi} & \frac{180\,\text{ArcCos}\left[\frac{1}{\sqrt{10}}\right]}{\pi} & 90 \end{pmatrix}$$

Orthodiagonal check: $\cos(\alpha_i)\cdot\cos(\gamma_i) - \cos(\beta_i)\cdot\cos(\delta_i)$ *for* $i = 1..4$

$\cos(\alpha 1)\cdot\cos(\gamma 1) - \cos(\beta 1)\cdot\cos(\delta 1) = \frac{1}{5\sqrt{2}}$

$\cos(\alpha 2)\cdot\cos(\gamma 2) - \cos(\beta 2)\cdot\cos(\delta 2) = \frac{1}{8\sqrt{22}}$

$\cos(\alpha 3)\cdot\cos(\gamma 3) - \cos(\beta 3)\cdot\cos(\delta 3) = -\frac{1}{8\sqrt{22}}$

$\cos(\alpha 4)\cdot\cos(\gamma 4) - \cos(\beta 4)\cdot\cos(\delta 4) = -\frac{1}{5\sqrt{2}}$

Switch combination: Right + Left + Lower

Switched anglesDeg:

$$\begin{pmatrix} 180-\frac{180\,\text{ArcCos}\left[\frac{1}{\sqrt{5}}\right]}{\pi} & \frac{180\,\text{ArcCos}\left[\frac{7}{5\sqrt{2}}\right]}{\pi} & 180-\frac{180\,\text{ArcCos}\left[-\frac{1}{\sqrt{10}}\right]}{\pi} & 90 \\ 180-\frac{180\,\text{ArcCos}\left[\frac{1}{4\sqrt{11}}\right]}{\pi} & \frac{180\,\text{ArcCos}\left[\frac{7\sqrt{\frac{7}{22}}}{4}\right]}{\pi} & 180-\frac{180\,\text{ArcCos}\left[-\frac{1}{2\sqrt{2}}\right]}{\pi} & 90 \\ \frac{180\,\text{ArcCos}\left[\frac{1}{4\sqrt{11}}\right]}{\pi} & 180-\frac{180\,\text{ArcCos}\left[\frac{7\sqrt{\frac{7}{22}}}{4}\right]}{\pi} & 180-\frac{180\,\text{ArcCos}\left[\frac{1}{2\sqrt{2}}\right]}{\pi} & 90 \\ \frac{180\,\text{ArcCos}\left[\frac{1}{\sqrt{5}}\right]}{\pi} & 180-\frac{180\,\text{ArcCos}\left[\frac{7}{5\sqrt{2}}\right]}{\pi} & 180-\frac{180\,\text{ArcCos}\left[\frac{1}{\sqrt{10}}\right]}{\pi} & 90 \end{pmatrix}$$

Orthodiagonal check: $\cos(\alpha_i)\cdot\cos(\gamma_i) - \cos(\beta_i)\cdot\cos(\delta_i)$ *for* $i = 1..4$

$\cos(\alpha 1)\cdot\cos(\gamma 1) - \cos(\beta 1)\cdot\cos(\delta 1) = -\frac{1}{5\sqrt{2}}$

$\cos(\alpha 2)\cdot\cos(\gamma 2) - \cos(\beta 2)\cdot\cos(\delta 2) = -\frac{1}{8\sqrt{22}}$

$\cos(\alpha 3)\cdot\cos(\gamma 3) - \cos(\beta 3)\cdot\cos(\delta 3) = -\frac{1}{8\sqrt{22}}$

$\cos(\alpha 4)\cdot\cos(\gamma 4) - \cos(\beta 4)\cdot\cos(\delta 4) = -\frac{1}{5\sqrt{2}}$

Switch combination: Right + Left + Upper

Switched anglesDeg:

$$\begin{pmatrix} \frac{180\,\text{ArcCos}\left[\frac{1}{\sqrt{5}}\right]}{\pi} & 180-\frac{180\,\text{ArcCos}\left[\frac{7}{5\sqrt{2}}\right]}{\pi} & 180-\frac{180\,\text{ArcCos}\left[-\frac{1}{\sqrt{10}}\right]}{\pi} & 90 \\ \frac{180\,\text{ArcCos}\left[\frac{1}{4\sqrt{11}}\right]}{\pi} & 180-\frac{180\,\text{ArcCos}\left[\frac{7\sqrt{\frac{7}{22}}}{4}\right]}{\pi} & 180-\frac{180\,\text{ArcCos}\left[-\frac{1}{2\sqrt{2}}\right]}{\pi} & 90 \\ 180-\frac{180\,\text{ArcCos}\left[\frac{1}{4\sqrt{11}}\right]}{\pi} & \frac{180\,\text{ArcCos}\left[\frac{7\sqrt{\frac{7}{22}}}{4}\right]}{\pi} & 180-\frac{180\,\text{ArcCos}\left[\frac{1}{2\sqrt{2}}\right]}{\pi} & 90 \\ 180-\frac{180\,\text{ArcCos}\left[\frac{1}{\sqrt{5}}\right]}{\pi} & \frac{180\,\text{ArcCos}\left[\frac{7}{5\sqrt{2}}\right]}{\pi} & 180-\frac{180\,\text{ArcCos}\left[\frac{1}{\sqrt{10}}\right]}{\pi} & 90 \end{pmatrix}$$

Orthodiagonal check: $\cos(\alpha_i)\cdot\cos(\gamma_i) - \cos(\beta_i)\cdot\cos(\delta_i)$ *for* $i = 1..4$

$\cos(\alpha 1)\cdot\cos(\gamma 1) - \cos(\beta 1)\cdot\cos(\delta 1) = \frac{1}{5\sqrt{2}}$

$\cos(\alpha 2)\cdot\cos(\gamma 2) - \cos(\beta 2)\cdot\cos(\delta 2) = \frac{1}{8\sqrt{22}}$

$\cos(\alpha 3)\cdot\cos(\gamma 3) - \cos(\beta 3)\cdot\cos(\delta 3) = \frac{1}{8\sqrt{22}}$

$\cos(\alpha 4)\cdot\cos(\gamma 4) - \cos(\beta 4)\cdot\cos(\delta 4) = \frac{1}{5\sqrt{2}}$

Switch combination: Right + Lower + Upper

Switched anglesDeg:

$$\begin{pmatrix} 180-\frac{180\,\text{ArcCos}\left[\frac{1}{\sqrt{5}}\right]}{\pi} & \frac{180\,\text{ArcCos}\left[\frac{7}{5\sqrt{2}}\right]}{\pi} & 180-\frac{180\,\text{ArcCos}\left[-\frac{1}{\sqrt{10}}\right]}{\pi} & 90 \\ 180-\frac{180\,\text{ArcCos}\left[\frac{1}{4\sqrt{11}}\right]}{\pi} & 180-\frac{180\,\text{ArcCos}\left[\frac{7\sqrt{\frac{7}{22}}}{4}\right]}{\pi} & \frac{180\,\text{ArcCos}\left[-\frac{1}{2\sqrt{2}}\right]}{\pi} & 90 \\ 180-\frac{180\,\text{ArcCos}\left[\frac{1}{4\sqrt{11}}\right]}{\pi} & 180-\frac{180\,\text{ArcCos}\left[\frac{7\sqrt{\frac{7}{22}}}{4}\right]}{\pi} & \frac{180\,\text{ArcCos}\left[\frac{1}{2\sqrt{2}}\right]}{\pi} & 90 \\ 180-\frac{180\,\text{ArcCos}\left[\frac{1}{\sqrt{5}}\right]}{\pi} & \frac{180\,\text{ArcCos}\left[\frac{7}{5\sqrt{2}}\right]}{\pi} & 180-\frac{180\,\text{ArcCos}\left[\frac{1}{\sqrt{10}}\right]}{\pi} & 90 \end{pmatrix}$$

Orthodiagonal check: $\cos(\alpha_i)\cdot\cos(\gamma_i) - \cos(\beta_i)\cdot\cos(\delta_i)$ *for* $i = 1..4$

$\cos(\alpha 1)\cdot\cos(\gamma 1) - \cos(\beta 1)\cdot\cos(\delta 1) = -\frac{1}{5\sqrt{2}}$

$\cos(\alpha 2)\cdot\cos(\gamma 2) - \cos(\beta 2)\cdot\cos(\delta 2) = \frac{1}{8\sqrt{22}}$

$\cos(\alpha 3)\cdot\cos(\gamma 3) - \cos(\beta 3)\cdot\cos(\delta 3) = -\frac{1}{8\sqrt{22}}$

$\cos(\alpha 4)\cdot\cos(\gamma 4) - \cos(\beta 4)\cdot\cos(\delta 4) = \frac{1}{5\sqrt{2}}$

Switch combination: Left + Lower + Upper

Switched anglesDeg:

$$\begin{pmatrix} 180 - \frac{180\,\mathrm{ArcCos}\left[\frac{1}{\sqrt{5}}\right]}{\pi} & 180 - \frac{180\,\mathrm{ArcCos}\left[\frac{7}{5\sqrt{2}}\right]}{\pi} & \frac{180\,\mathrm{ArcCos}\left[-\frac{1}{\sqrt{10}}\right]}{\pi} & 90 \\ 180 - \frac{180\,\mathrm{ArcCos}\left[\frac{1}{4\sqrt{11}}\right]}{\pi} & \frac{180\,\mathrm{ArcCos}\left[\frac{7\sqrt{\frac{7}{22}}}{4}\right]}{\pi} & 180 - \frac{180\,\mathrm{ArcCos}\left[-\frac{1}{2\sqrt{2}}\right]}{\pi} & 90 \\ 180 - \frac{180\,\mathrm{ArcCos}\left[\frac{1}{4\sqrt{11}}\right]}{\pi} & \frac{180\,\mathrm{ArcCos}\left[\frac{7\sqrt{\frac{7}{22}}}{4}\right]}{\pi} & 180 - \frac{180\,\mathrm{ArcCos}\left[\frac{1}{2\sqrt{2}}\right]}{\pi} & 90 \\ 180 - \frac{180\,\mathrm{ArcCos}\left[\frac{1}{\sqrt{5}}\right]}{\pi} & 180 - \frac{180\,\mathrm{ArcCos}\left[\frac{7}{5\sqrt{2}}\right]}{\pi} & \frac{180\,\mathrm{ArcCos}\left[\frac{1}{\sqrt{10}}\right]}{\pi} & 90 \end{pmatrix}$$

Orthodiagonal check: $\cos(\alpha_i)\cdot\cos(\gamma_i) - \cos(\beta_i)\cdot\cos(\delta_i)$ *for* $i = 1..4$

$\cos(\alpha 1)\cdot\cos(\gamma 1) - \cos(\beta 1)\cdot\cos(\delta 1) = \frac{1}{5\sqrt{2}}$

$\cos(\alpha 2)\cdot\cos(\gamma 2) - \cos(\beta 2)\cdot\cos(\delta 2) = -\frac{1}{8\sqrt{22}}$

$\cos(\alpha 3)\cdot\cos(\gamma 3) - \cos(\beta 3)\cdot\cos(\delta 3) = \frac{1}{8\sqrt{22}}$

$\cos(\alpha 4)\cdot\cos(\gamma 4) - \cos(\beta 4)\cdot\cos(\delta 4) = -\frac{1}{5\sqrt{2}}$

Switch combination: Right + Left + Lower + Upper

Switched anglesDeg:

$$\begin{pmatrix} 180 - \frac{180\,\mathrm{ArcCos}\left[\frac{1}{\sqrt{5}}\right]}{\pi} & \frac{180\,\mathrm{ArcCos}\left[\frac{7}{5\sqrt{2}}\right]}{\pi} & 180 - \frac{180\,\mathrm{ArcCos}\left[-\frac{1}{\sqrt{10}}\right]}{\pi} & 90 \\ 180 - \frac{180\,\mathrm{ArcCos}\left[\frac{1}{4\sqrt{11}}\right]}{\pi} & \frac{180\,\mathrm{ArcCos}\left[\frac{7\sqrt{\frac{7}{22}}}{4}\right]}{\pi} & 180 - \frac{180\,\mathrm{ArcCos}\left[-\frac{1}{2\sqrt{2}}\right]}{\pi} & 90 \\ 180 - \frac{180\,\mathrm{ArcCos}\left[\frac{1}{4\sqrt{11}}\right]}{\pi} & \frac{180\,\mathrm{ArcCos}\left[\frac{7\sqrt{\frac{7}{22}}}{4}\right]}{\pi} & 180 - \frac{180\,\mathrm{ArcCos}\left[\frac{1}{2\sqrt{2}}\right]}{\pi} & 90 \\ 180 - \frac{180\,\mathrm{ArcCos}\left[\frac{1}{\sqrt{5}}\right]}{\pi} & \frac{180\,\mathrm{ArcCos}\left[\frac{7}{5\sqrt{2}}\right]}{\pi} & 180 - \frac{180\,\mathrm{ArcCos}\left[\frac{1}{\sqrt{10}}\right]}{\pi} & 90 \end{pmatrix}$$

Orthodiagonal check: $\cos(\alpha_i)\cdot\cos(\gamma_i) - \cos(\beta_i)\cdot\cos(\delta_i)$ *for* $i = 1..4$

$\cos(\alpha 1)\cdot\cos(\gamma 1) - \cos(\beta 1)\cdot\cos(\delta 1) = -\frac{1}{5\sqrt{2}}$

$\cos(\alpha 2)\cdot\cos(\gamma 2) - \cos(\beta 2)\cdot\cos(\delta 2) = -\frac{1}{8\sqrt{22}}$

$\cos(\alpha 3)\cdot\cos(\gamma 3) - \cos(\beta 3)\cdot\cos(\delta 3) = \frac{1}{8\sqrt{22}}$

$\cos(\alpha 4)\cdot\cos(\gamma 4) - \cos(\beta 4)\cdot\cos(\delta 4) = \frac{1}{5\sqrt{2}}$

Out[1852]=

================= NOT ISOGONAL =================

Condition (N.0) holds AND for all i = 1…4: $\alpha_i \neq \beta_i$, $\alpha_i \neq \gamma_i$, $\alpha_i \neq \delta_i$, $\beta_i \neq \gamma_i$, $\beta_i \neq \delta_i$, $\gamma_i \neq \delta_i$, $\alpha_i+\beta_i \neq \pi \neq \gamma_i+\delta_i$, $\alpha_i+\gamma_i \neq \pi \neq \beta_i+\delta_i$, $\alpha_i+\delta_i \neq \pi \neq \beta_i+\gamma_i \Rightarrow$ NOT isogonal. Switching boundary strips do not change this.

Initial anglesDeg (no switches):

$$\begin{pmatrix} \frac{180\,\text{ArcCos}\left[\frac{1}{\sqrt{5}}\right]}{\pi} & \frac{180\,\text{ArcCos}\left[\frac{7}{5\,\sqrt{2}}\right]}{\pi} & \frac{180\,\text{ArcCos}\left[-\frac{1}{\sqrt{10}}\right]}{\pi} & 90 \\ \frac{180\,\text{ArcCos}\left[\frac{1}{4\,\sqrt{11}}\right]}{\pi} & \frac{180\,\text{ArcCos}\left[\frac{7\sqrt{\frac{7}{22}}}{4}\right]}{\pi} & \frac{180\,\text{ArcCos}\left[-\frac{1}{2\,\sqrt{2}}\right]}{\pi} & 90 \\ \frac{180\,\text{ArcCos}\left[\frac{1}{4\,\sqrt{11}}\right]}{\pi} & \frac{180\,\text{ArcCos}\left[\frac{7\sqrt{\frac{7}{22}}}{4}\right]}{\pi} & \frac{180\,\text{ArcCos}\left[\frac{1}{2\,\sqrt{2}}\right]}{\pi} & 90 \\ \frac{180\,\text{ArcCos}\left[\frac{1}{\sqrt{5}}\right]}{\pi} & \frac{180\,\text{ArcCos}\left[\frac{7}{5\,\sqrt{2}}\right]}{\pi} & \frac{180\,\text{ArcCos}\left[\frac{1}{\sqrt{10}}\right]}{\pi} & 90 \end{pmatrix}$$

Angle relation checks for i = 1..4:

Vertex 1

$\alpha1 - \beta1 = 55.305$
$\alpha1 - \gamma1 = -45.000$
$\alpha1 - \delta1 = -26.565$
$\beta1 - \gamma1 = -100.300$
$\beta1 - \delta1 = -81.870$
$\gamma1 - \delta1 = 18.435$
$\alpha1 + \beta1 - 180 = -108.430$
$\gamma1 + \delta1 - 180 = 18.435$
$\alpha1 + \gamma1 - 180 = -8.130$
$\beta1 + \delta1 - 180 = -81.870$
$\alpha1 + \delta1 - 180 = -26.565$
$\beta1 + \gamma1 - 180 = -63.435$
$\alpha1 + \beta1 - \gamma1 - \delta1 = -126.870$
$\alpha1 + \gamma1 - \beta1 - \delta1 = 73.740$
$\alpha1 + \delta1 - \beta1 - \gamma1 = 36.870$

Vertex 2

$\alpha2 - \beta2 = 76.476$
$\alpha2 - \gamma2 = -25.028$
$\alpha2 - \delta2 = -4.323$
$\beta2 - \gamma2 = -101.500$
$\beta2 - \delta2 = -80.799$
$\gamma2 - \delta2 = 20.705$
$\alpha2 + \beta2 - 180 = -85.122$
$\gamma2 + \delta2 - 180 = 20.705$
$\alpha2 + \gamma2 - 180 = 16.382$
$\beta2 + \delta2 - 180 = -80.799$
$\alpha2 + \delta2 - 180 = -4.323$
$\beta2 + \gamma2 - 180 = -60.094$
$\alpha2 + \beta2 - \gamma2 - \delta2 = -105.830$
$\alpha2 + \gamma2 - \beta2 - \delta2 = 97.181$
$\alpha2 + \delta2 - \beta2 - \gamma2 = 55.771$

Vertex 3

$\alpha3 - \beta3 = 76.476$
$\alpha3 - \gamma3 = 16.382$
$\alpha3 - \delta3 = -4.323$
$\beta3 - \gamma3 = -60.094$
$\beta3 - \delta3 = -80.799$
$\gamma3 - \delta3 = -20.705$
$\alpha3 + \beta3 - 180 = -85.122$
$\gamma3 + \delta3 - 180 = -20.705$
$\alpha3 + \gamma3 - 180 = -25.028$
$\beta3 + \delta3 - 180 = -80.799$
$\alpha3 + \delta3 - 180 = -4.323$
$\beta3 + \gamma3 - 180 = -101.500$

$\alpha3 + \beta3 - \gamma3 - \delta3 = -64.417$
$\alpha3 + \gamma3 - \beta3 - \delta3 = 55.771$
$\alpha3 + \delta3 - \beta3 - \gamma3 = 97.181$

Vertex 4
$\alpha4 - \beta4 = 55.305$
$\alpha4 - \gamma4 = -8.130$
$\alpha4 - \delta4 = -26.565$
$\beta4 - \gamma4 = -63.435$
$\beta4 - \delta4 = -81.870$
$\gamma4 - \delta4 = -18.435$
$\alpha4 + \beta4 - 180 = -108.430$
$\gamma4 + \delta4 - 180 = -18.435$
$\alpha4 + \gamma4 - 180 = -45.000$
$\beta4 + \delta4 - 180 = -81.870$
$\alpha4 + \delta4 - 180 = -26.565$
$\beta4 + \gamma4 - 180 = -100.300$
$\alpha4 + \beta4 - \gamma4 - \delta4 = -90.000$
$\alpha4 + \gamma4 - \beta4 - \delta4 = 36.870$
$\alpha4 + \delta4 - \beta4 - \gamma4 = 73.740$

Switch combination: Right

Switched anglesDeg:

$$\begin{pmatrix} \frac{180\,\mathrm{ArcCos}\left[\frac{1}{\sqrt{5}}\right]}{\pi} & 180-\frac{180\,\mathrm{ArcCos}\left[\frac{7}{5\sqrt{2}}\right]}{\pi} & 180-\frac{180\,\mathrm{ArcCos}\left[-\frac{1}{\sqrt{10}}\right]}{\pi} & 90 \\ \frac{180\,\mathrm{ArcCos}\left[\frac{1}{4\sqrt{11}}\right]}{\pi} & \frac{180\,\mathrm{ArcCos}\left[\frac{7\sqrt{\frac{7}{22}}}{4}\right]}{\pi} & \frac{180\,\mathrm{ArcCos}\left[-\frac{1}{2\sqrt{2}}\right]}{\pi} & 90 \\ \frac{180\,\mathrm{ArcCos}\left[\frac{1}{4\sqrt{11}}\right]}{\pi} & \frac{180\,\mathrm{ArcCos}\left[\frac{7\sqrt{\frac{7}{22}}}{4}\right]}{\pi} & \frac{180\,\mathrm{ArcCos}\left[\frac{1}{2\sqrt{2}}\right]}{\pi} & 90 \\ \frac{180\,\mathrm{ArcCos}\left[\frac{1}{\sqrt{5}}\right]}{\pi} & 180-\frac{180\,\mathrm{ArcCos}\left[\frac{7}{5\sqrt{2}}\right]}{\pi} & 180-\frac{180\,\mathrm{ArcCos}\left[\frac{1}{\sqrt{10}}\right]}{\pi} & 90 \end{pmatrix}$$

Angle relation checks for i = 1..4:

Vertex 1
$\alpha1 - \beta1 = -108.430$
$\alpha1 - \gamma1 = -8.130$
$\alpha1 - \delta1 = -26.565$
$\beta1 - \gamma1 = 100.300$
$\beta1 - \delta1 = 81.870$
$\gamma1 - \delta1 = -18.435$
$\alpha1 + \beta1 - 180 = 55.305$
$\gamma1 + \delta1 - 180 = -18.435$
$\alpha1 + \gamma1 - 180 = -45.000$
$\beta1 + \delta1 - 180 = 81.870$
$\alpha1 + \delta1 - 180 = -26.565$
$\beta1 + \gamma1 - 180 = 63.435$
$\alpha1 + \beta1 - \gamma1 - \delta1 = 73.740$
$\alpha1 + \gamma1 - \beta1 - \delta1 = -126.870$
$\alpha1 + \delta1 - \beta1 - \gamma1 = -90.000$

Vertex 2
$\alpha2 - \beta2 = 76.476$
$\alpha2 - \gamma2 = -25.028$
$\alpha2 - \delta2 = -4.323$
$\beta2 - \gamma2 = -101.500$
$\beta2 - \delta2 = -80.799$
$\gamma2 - \delta2 = 20.705$
$\alpha2 + \beta2 - 180 = -85.122$
$\gamma2 + \delta2 - 180 = 20.705$

$\alpha2 + \gamma2 - 180 = 16.382$
$\beta2 + \delta2 - 180 = -80.799$
$\alpha2 + \delta2 - 180 = -4.323$
$\beta2 + \gamma2 - 180 = -60.094$
$\alpha2 + \beta2 - \gamma2 - \delta2 = -105.830$
$\alpha2 + \gamma2 - \beta2 - \delta2 = 97.181$
$\alpha2 + \delta2 - \beta2 - \gamma2 = 55.771$

Vertex 3
$\alpha3 - \beta3 = 76.476$
$\alpha3 - \gamma3 = 16.382$
$\alpha3 - \delta3 = -4.323$
$\beta3 - \gamma3 = -60.094$
$\beta3 - \delta3 = -80.799$
$\gamma3 - \delta3 = -20.705$
$\alpha3 + \beta3 - 180 = -85.122$
$\gamma3 + \delta3 - 180 = -20.705$
$\alpha3 + \gamma3 - 180 = -25.028$
$\beta3 + \delta3 - 180 = -80.799$
$\alpha3 + \delta3 - 180 = -4.323$
$\beta3 + \gamma3 - 180 = -101.500$
$\alpha3 + \beta3 - \gamma3 - \delta3 = -64.417$
$\alpha3 + \gamma3 - \beta3 - \delta3 = 55.771$
$\alpha3 + \delta3 - \beta3 - \gamma3 = 97.181$

Vertex 4
$\alpha4 - \beta4 = -108.430$
$\alpha4 - \gamma4 = -45.000$
$\alpha4 - \delta4 = -26.565$
$\beta4 - \gamma4 = 63.435$
$\beta4 - \delta4 = 81.870$
$\gamma4 - \delta4 = 18.435$
$\alpha4 + \beta4 - 180 = 55.305$
$\gamma4 + \delta4 - 180 = 18.435$
$\alpha4 + \gamma4 - 180 = -8.130$
$\beta4 + \delta4 - 180 = 81.870$
$\alpha4 + \delta4 - 180 = -26.565$
$\beta4 + \gamma4 - 180 = 100.300$
$\alpha4 + \beta4 - \gamma4 - \delta4 = 36.870$
$\alpha4 + \gamma4 - \beta4 - \delta4 = -90.000$
$\alpha4 + \delta4 - \beta4 - \gamma4 = -126.870$

Switch combination: Left

Switched anglesDeg:

$$\begin{pmatrix} \frac{180\,\text{ArcCos}\left[\frac{1}{\sqrt{5}}\right]}{\pi} & \frac{180\,\text{ArcCos}\left[\frac{7}{5\sqrt{2}}\right]}{\pi} & \frac{180\,\text{ArcCos}\left[-\frac{1}{\sqrt{10}}\right]}{\pi} & 90 \\ \frac{180\,\text{ArcCos}\left[\frac{1}{4\sqrt{11}}\right]}{\pi} & 180-\frac{180\,\text{ArcCos}\left[\frac{7\sqrt{\frac{7}{22}}}{4}\right]}{\pi} & 180-\frac{180\,\text{ArcCos}\left[-\frac{1}{2\sqrt{2}}\right]}{\pi} & 90 \\ \frac{180\,\text{ArcCos}\left[\frac{1}{4\sqrt{11}}\right]}{\pi} & 180-\frac{180\,\text{ArcCos}\left[\frac{7\sqrt{\frac{7}{22}}}{4}\right]}{\pi} & 180-\frac{180\,\text{ArcCos}\left[\frac{1}{2\sqrt{2}}\right]}{\pi} & 90 \\ \frac{180\,\text{ArcCos}\left[\frac{1}{\sqrt{5}}\right]}{\pi} & \frac{180\,\text{ArcCos}\left[\frac{7}{5\sqrt{2}}\right]}{\pi} & \frac{180\,\text{ArcCos}\left[\frac{1}{\sqrt{10}}\right]}{\pi} & 90 \end{pmatrix}$$

Angle relation checks for i = 1..4:

Vertex 1
$\alpha1 - \beta1 = 55.305$
$\alpha1 - \gamma1 = -45.000$
$\alpha1 - \delta1 = -26.565$

$\beta1 - \gamma1 = -100.300$
$\beta1 - \delta1 = -81.870$
$\gamma1 - \delta1 = 18.435$
$\alpha1 + \beta1 - 180 = -108.430$
$\gamma1 + \delta1 - 180 = 18.435$
$\alpha1 + \gamma1 - 180 = -8.130$
$\beta1 + \delta1 - 180 = -81.870$
$\alpha1 + \delta1 - 180 = -26.565$
$\beta1 + \gamma1 - 180 = -63.435$
$\alpha1 + \beta1 - \gamma1 - \delta1 = -126.870$
$\alpha1 + \gamma1 - \beta1 - \delta1 = 73.740$
$\alpha1 + \delta1 - \beta1 - \gamma1 = 36.870$

Vertex 2
$\alpha2 - \beta2 = -85.122$
$\alpha2 - \gamma2 = 16.382$
$\alpha2 - \delta2 = -4.323$
$\beta2 - \gamma2 = 101.500$
$\beta2 - \delta2 = 80.799$
$\gamma2 - \delta2 = -20.705$
$\alpha2 + \beta2 - 180 = 76.476$
$\gamma2 + \delta2 - 180 = -20.705$
$\alpha2 + \gamma2 - 180 = -25.028$
$\beta2 + \delta2 - 180 = 80.799$
$\alpha2 + \delta2 - 180 = -4.323$
$\beta2 + \gamma2 - 180 = 60.094$
$\alpha2 + \beta2 - \gamma2 - \delta2 = 97.181$
$\alpha2 + \gamma2 - \beta2 - \delta2 = -105.830$
$\alpha2 + \delta2 - \beta2 - \gamma2 = -64.417$

Vertex 3
$\alpha3 - \beta3 = -85.122$
$\alpha3 - \gamma3 = -25.028$
$\alpha3 - \delta3 = -4.323$
$\beta3 - \gamma3 = 60.094$
$\beta3 - \delta3 = 80.799$
$\gamma3 - \delta3 = 20.705$
$\alpha3 + \beta3 - 180 = 76.476$
$\gamma3 + \delta3 - 180 = 20.705$
$\alpha3 + \gamma3 - 180 = 16.382$
$\beta3 + \delta3 - 180 = 80.799$
$\alpha3 + \delta3 - 180 = -4.323$
$\beta3 + \gamma3 - 180 = 101.500$
$\alpha3 + \beta3 - \gamma3 - \delta3 = 55.771$
$\alpha3 + \gamma3 - \beta3 - \delta3 = -64.417$
$\alpha3 + \delta3 - \beta3 - \gamma3 = -105.830$

Vertex 4
$\alpha4 - \beta4 = 55.305$
$\alpha4 - \gamma4 = -8.130$
$\alpha4 - \delta4 = -26.565$
$\beta4 - \gamma4 = -63.435$
$\beta4 - \delta4 = -81.870$
$\gamma4 - \delta4 = -18.435$
$\alpha4 + \beta4 - 180 = -108.430$
$\gamma4 + \delta4 - 180 = -18.435$
$\alpha4 + \gamma4 - 180 = -45.000$
$\beta4 + \delta4 - 180 = -81.870$
$\alpha4 + \delta4 - 180 = -26.565$
$\beta4 + \gamma4 - 180 = -100.300$
$\alpha4 + \beta4 - \gamma4 - \delta4 = -90.000$
$\alpha4 + \gamma4 - \beta4 - \delta4 = 36.870$

$\alpha 4 + \delta 4 - \beta 4 - \gamma 4 = 73.740$

Switch combination: Lower

Switched anglesDeg:

$$\begin{pmatrix} 180 - \frac{180 \text{ ArcCos}\left[\frac{1}{\sqrt{5}}\right]}{\pi} & 180 - \frac{180 \text{ ArcCos}\left[\frac{7}{5\sqrt{2}}\right]}{\pi} & \frac{180 \text{ ArcCos}\left[-\frac{1}{\sqrt{10}}\right]}{\pi} & 90 \\ 180 - \frac{180 \text{ ArcCos}\left[\frac{1}{4\sqrt{11}}\right]}{\pi} & 180 - \frac{180 \text{ ArcCos}\left[\frac{7\sqrt{\frac{7}{22}}}{4}\right]}{\pi} & \frac{180 \text{ ArcCos}\left[-\frac{1}{2\sqrt{2}}\right]}{\pi} & 90 \\ \frac{180 \text{ ArcCos}\left[\frac{1}{4\sqrt{11}}\right]}{\pi} & \frac{180 \text{ ArcCos}\left[\frac{7\sqrt{\frac{7}{22}}}{4}\right]}{\pi} & \frac{180 \text{ ArcCos}\left[\frac{1}{2\sqrt{2}}\right]}{\pi} & 90 \\ \frac{180 \text{ ArcCos}\left[\frac{1}{\sqrt{5}}\right]}{\pi} & \frac{180 \text{ ArcCos}\left[\frac{7}{5\sqrt{2}}\right]}{\pi} & \frac{180 \text{ ArcCos}\left[\frac{1}{\sqrt{10}}\right]}{\pi} & 90 \end{pmatrix}$$

Angle relation checks for i = 1..4:

Vertex 1

$\alpha 1 - \beta 1 = -55.305$
$\alpha 1 - \gamma 1 = 8.130$
$\alpha 1 - \delta 1 = 26.565$
$\beta 1 - \gamma 1 = 63.435$
$\beta 1 - \delta 1 = 81.870$
$\gamma 1 - \delta 1 = 18.435$
$\alpha 1 + \beta 1 - 180 = 108.430$
$\gamma 1 + \delta 1 - 180 = 18.435$
$\alpha 1 + \gamma 1 - 180 = 45.000$
$\beta 1 + \delta 1 - 180 = 81.870$
$\alpha 1 + \delta 1 - 180 = 26.565$
$\beta 1 + \gamma 1 - 180 = 100.300$
$\alpha 1 + \beta 1 - \gamma 1 - \delta 1 = 90.000$
$\alpha 1 + \gamma 1 - \beta 1 - \delta 1 = -36.870$
$\alpha 1 + \delta 1 - \beta 1 - \gamma 1 = -73.740$

Vertex 2

$\alpha 2 - \beta 2 = -76.476$
$\alpha 2 - \gamma 2 = -16.382$
$\alpha 2 - \delta 2 = 4.323$
$\beta 2 - \gamma 2 = 60.094$
$\beta 2 - \delta 2 = 80.799$
$\gamma 2 - \delta 2 = 20.705$
$\alpha 2 + \beta 2 - 180 = 85.122$
$\gamma 2 + \delta 2 - 180 = 20.705$
$\alpha 2 + \gamma 2 - 180 = 25.028$
$\beta 2 + \delta 2 - 180 = 80.799$
$\alpha 2 + \delta 2 - 180 = 4.323$
$\beta 2 + \gamma 2 - 180 = 101.500$
$\alpha 2 + \beta 2 - \gamma 2 - \delta 2 = 64.417$
$\alpha 2 + \gamma 2 - \beta 2 - \delta 2 = -55.771$
$\alpha 2 + \delta 2 - \beta 2 - \gamma 2 = -97.181$

Vertex 3

$\alpha 3 - \beta 3 = 76.476$
$\alpha 3 - \gamma 3 = 16.382$
$\alpha 3 - \delta 3 = -4.323$
$\beta 3 - \gamma 3 = -60.094$
$\beta 3 - \delta 3 = -80.799$
$\gamma 3 - \delta 3 = -20.705$
$\alpha 3 + \beta 3 - 180 = -85.122$
$\gamma 3 + \delta 3 - 180 = -20.705$
$\alpha 3 + \gamma 3 - 180 = -25.028$
$\beta 3 + \delta 3 - 180 = -80.799$

$\beta 3 + \delta 3 - 180 = -80.799$
$\alpha 3 + \delta 3 - 180 = -4.323$
$\beta 3 + \gamma 3 - 180 = -101.500$
$\alpha 3 + \beta 3 - \gamma 3 - \delta 3 = -64.417$
$\alpha 3 + \gamma 3 - \beta 3 - \delta 3 = 55.771$
$\alpha 3 + \delta 3 - \beta 3 - \gamma 3 = 97.181$

Vertex 4
$\alpha 4 - \beta 4 = 55.305$
$\alpha 4 - \gamma 4 = -8.130$
$\alpha 4 - \delta 4 = -26.565$
$\beta 4 - \gamma 4 = -63.435$
$\beta 4 - \delta 4 = -81.870$
$\gamma 4 - \delta 4 = -18.435$
$\alpha 4 + \beta 4 - 180 = -108.430$
$\gamma 4 + \delta 4 - 180 = -18.435$
$\alpha 4 + \gamma 4 - 180 = -45.000$
$\beta 4 + \delta 4 - 180 = -81.870$
$\alpha 4 + \delta 4 - 180 = -26.565$
$\beta 4 + \gamma 4 - 180 = -100.300$
$\alpha 4 + \beta 4 - \gamma 4 - \delta 4 = -90.000$
$\alpha 4 + \gamma 4 - \beta 4 - \delta 4 = 36.870$
$\alpha 4 + \delta 4 - \beta 4 - \gamma 4 = 73.740$

Switch combination: Upper

Switched anglesDeg:

$$\begin{pmatrix} \frac{180\,\text{ArcCos}\left[\frac{1}{\sqrt{5}}\right]}{\pi} & \frac{180\,\text{ArcCos}\left[\frac{7}{5\sqrt{2}}\right]}{\pi} & \frac{180\,\text{ArcCos}\left[-\frac{1}{\sqrt{10}}\right]}{\pi} & 90 \\ \frac{180\,\text{ArcCos}\left[\frac{1}{4\sqrt{11}}\right]}{\pi} & \frac{180\,\text{ArcCos}\left[\frac{7\sqrt{\frac{7}{22}}}{4}\right]}{\pi} & \frac{180\,\text{ArcCos}\left[-\frac{1}{2\sqrt{2}}\right]}{\pi} & 90 \\ 180 - \frac{180\,\text{ArcCos}\left[\frac{1}{4\sqrt{11}}\right]}{\pi} & 180 - \frac{180\,\text{ArcCos}\left[\frac{7\sqrt{\frac{7}{22}}}{4}\right]}{\pi} & \frac{180\,\text{ArcCos}\left[\frac{1}{2\sqrt{2}}\right]}{\pi} & 90 \\ 180 - \frac{180\,\text{ArcCos}\left[\frac{1}{\sqrt{5}}\right]}{\pi} & 180 - \frac{180\,\text{ArcCos}\left[\frac{7}{5\sqrt{2}}\right]}{\pi} & \frac{180\,\text{ArcCos}\left[\frac{1}{\sqrt{10}}\right]}{\pi} & 90 \end{pmatrix}$$

Angle relation checks for i = 1..4:

Vertex 1
$\alpha 1 - \beta 1 = 55.305$
$\alpha 1 - \gamma 1 = -45.000$
$\alpha 1 - \delta 1 = -26.565$
$\beta 1 - \gamma 1 = -100.300$
$\beta 1 - \delta 1 = -81.870$
$\gamma 1 - \delta 1 = 18.435$
$\alpha 1 + \beta 1 - 180 = -108.430$
$\gamma 1 + \delta 1 - 180 = 18.435$
$\alpha 1 + \gamma 1 - 180 = -8.130$
$\beta 1 + \delta 1 - 180 = -81.870$
$\alpha 1 + \delta 1 - 180 = -26.565$
$\beta 1 + \gamma 1 - 180 = -63.435$
$\alpha 1 + \beta 1 - \gamma 1 - \delta 1 = -126.870$
$\alpha 1 + \gamma 1 - \beta 1 - \delta 1 = 73.740$
$\alpha 1 + \delta 1 - \beta 1 - \gamma 1 = 36.870$

Vertex 2
$\alpha 2 - \beta 2 = 76.476$
$\alpha 2 - \gamma 2 = -25.028$
$\alpha 2 - \delta 2 = -4.323$
$\beta 2 - \gamma 2 = -101.500$
$\beta 2 - \delta 2 = -80.799$

$\gamma2 - \delta2 = 20.705$
$\alpha2 + \beta2 - 180 = -85.122$
$\gamma2 + \delta2 - 180 = 20.705$
$\alpha2 + \gamma2 - 180 = 16.382$
$\beta2 + \delta2 - 180 = -80.799$
$\alpha2 + \delta2 - 180 = -4.323$
$\beta2 + \gamma2 - 180 = -60.094$
$\alpha2 + \beta2 - \gamma2 - \delta2 = -105.830$
$\alpha2 + \gamma2 - \beta2 - \delta2 = 97.181$
$\alpha2 + \delta2 - \beta2 - \gamma2 = 55.771$

Vertex 3
$\alpha3 - \beta3 = -76.476$
$\alpha3 - \gamma3 = 25.028$
$\alpha3 - \delta3 = 4.323$
$\beta3 - \gamma3 = 101.500$
$\beta3 - \delta3 = 80.799$
$\gamma3 - \delta3 = -20.705$
$\alpha3 + \beta3 - 180 = 85.122$
$\gamma3 + \delta3 - 180 = -20.705$
$\alpha3 + \gamma3 - 180 = -16.382$
$\beta3 + \delta3 - 180 = 80.799$
$\alpha3 + \delta3 - 180 = 4.323$
$\beta3 + \gamma3 - 180 = 60.094$
$\alpha3 + \beta3 - \gamma3 - \delta3 = 105.830$
$\alpha3 + \gamma3 - \beta3 - \delta3 = -97.181$
$\alpha3 + \delta3 - \beta3 - \gamma3 = -55.771$

Vertex 4
$\alpha4 - \beta4 = -55.305$
$\alpha4 - \gamma4 = 45.000$
$\alpha4 - \delta4 = 26.565$
$\beta4 - \gamma4 = 100.300$
$\beta4 - \delta4 = 81.870$
$\gamma4 - \delta4 = -18.435$
$\alpha4 + \beta4 - 180 = 108.430$
$\gamma4 + \delta4 - 180 = -18.435$
$\alpha4 + \gamma4 - 180 = 8.130$
$\beta4 + \delta4 - 180 = 81.870$
$\alpha4 + \delta4 - 180 = 26.565$
$\beta4 + \gamma4 - 180 = 63.435$
$\alpha4 + \beta4 - \gamma4 - \delta4 = 126.870$
$\alpha4 + \gamma4 - \beta4 - \delta4 = -73.740$
$\alpha4 + \delta4 - \beta4 - \gamma4 = -36.870$

Switch combination: Right + Left

Switched anglesDeg:

$$\begin{pmatrix} \frac{180\,\text{ArcCos}\left[\frac{1}{\sqrt{5}}\right]}{\pi} & 180 - \frac{180\,\text{ArcCos}\left[\frac{7}{5\sqrt{2}}\right]}{\pi} & 180 - \frac{180\,\text{ArcCos}\left[-\frac{1}{\sqrt{10}}\right]}{\pi} & 90 \\ \frac{180\,\text{ArcCos}\left[\frac{1}{4\sqrt{11}}\right]}{\pi} & 180 - \frac{180\,\text{ArcCos}\left[\frac{7\sqrt{\frac{7}{22}}}{4}\right]}{\pi} & 180 - \frac{180\,\text{ArcCos}\left[-\frac{1}{2\sqrt{2}}\right]}{\pi} & 90 \\ \frac{180\,\text{ArcCos}\left[\frac{1}{4\sqrt{11}}\right]}{\pi} & 180 - \frac{180\,\text{ArcCos}\left[\frac{7\sqrt{\frac{7}{22}}}{4}\right]}{\pi} & 180 - \frac{180\,\text{ArcCos}\left[\frac{1}{2\sqrt{2}}\right]}{\pi} & 90 \\ \frac{180\,\text{ArcCos}\left[\frac{1}{\sqrt{5}}\right]}{\pi} & 180 - \frac{180\,\text{ArcCos}\left[\frac{7}{5\sqrt{2}}\right]}{\pi} & 180 - \frac{180\,\text{ArcCos}\left[\frac{1}{\sqrt{10}}\right]}{\pi} & 90 \end{pmatrix}$$

Angle relation checks for i = 1..4:

Vertex 1
$\alpha1 - \beta1 = -108.430$

$\alpha 1 - \beta 1 = -108.430$
$\alpha 1 - \gamma 1 = -8.130$
$\alpha 1 - \delta 1 = -26.565$
$\beta 1 - \gamma 1 = 100.300$
$\beta 1 - \delta 1 = 81.870$
$\gamma 1 - \delta 1 = -18.435$
$\alpha 1 + \beta 1 - 180 = 55.305$
$\gamma 1 + \delta 1 - 180 = -18.435$
$\alpha 1 + \gamma 1 - 180 = -45.000$
$\beta 1 + \delta 1 - 180 = 81.870$
$\alpha 1 + \delta 1 - 180 = -26.565$
$\beta 1 + \gamma 1 - 180 = 63.435$
$\alpha 1 + \beta 1 - \gamma 1 - \delta 1 = 73.740$
$\alpha 1 + \gamma 1 - \beta 1 - \delta 1 = -126.870$
$\alpha 1 + \delta 1 - \beta 1 - \gamma 1 = -90.000$

Vertex 2
$\alpha 2 - \beta 2 = -85.122$
$\alpha 2 - \gamma 2 = 16.382$
$\alpha 2 - \delta 2 = -4.323$
$\beta 2 - \gamma 2 = 101.500$
$\beta 2 - \delta 2 = 80.799$
$\gamma 2 - \delta 2 = -20.705$
$\alpha 2 + \beta 2 - 180 = 76.476$
$\gamma 2 + \delta 2 - 180 = -20.705$
$\alpha 2 + \gamma 2 - 180 = -25.028$
$\beta 2 + \delta 2 - 180 = 80.799$
$\alpha 2 + \delta 2 - 180 = -4.323$
$\beta 2 + \gamma 2 - 180 = 60.094$
$\alpha 2 + \beta 2 - \gamma 2 - \delta 2 = 97.181$
$\alpha 2 + \gamma 2 - \beta 2 - \delta 2 = -105.830$
$\alpha 2 + \delta 2 - \beta 2 - \gamma 2 = -64.417$

Vertex 3
$\alpha 3 - \beta 3 = -85.122$
$\alpha 3 - \gamma 3 = -25.028$
$\alpha 3 - \delta 3 = -4.323$
$\beta 3 - \gamma 3 = 60.094$
$\beta 3 - \delta 3 = 80.799$
$\gamma 3 - \delta 3 = 20.705$
$\alpha 3 + \beta 3 - 180 = 76.476$
$\gamma 3 + \delta 3 - 180 = 20.705$
$\alpha 3 + \gamma 3 - 180 = 16.382$
$\beta 3 + \delta 3 - 180 = 80.799$
$\alpha 3 + \delta 3 - 180 = -4.323$
$\beta 3 + \gamma 3 - 180 = 101.500$
$\alpha 3 + \beta 3 - \gamma 3 - \delta 3 = 55.771$
$\alpha 3 + \gamma 3 - \beta 3 - \delta 3 = -64.417$
$\alpha 3 + \delta 3 - \beta 3 - \gamma 3 = -105.830$

Vertex 4
$\alpha 4 - \beta 4 = -108.430$
$\alpha 4 - \gamma 4 = -45.000$
$\alpha 4 - \delta 4 = -26.565$
$\beta 4 - \gamma 4 = 63.435$
$\beta 4 - \delta 4 = 81.870$
$\gamma 4 - \delta 4 = 18.435$
$\alpha 4 + \beta 4 - 180 = 55.305$
$\gamma 4 + \delta 4 - 180 = 18.435$
$\alpha 4 + \gamma 4 - 180 = -8.130$
$\beta 4 + \delta 4 - 180 = 81.870$
$\alpha 4 + \delta 4 - 180 = -26.565$

$\beta 4 + \gamma 4 - 180 = 100.300$
$\alpha 4 + \beta 4 - \gamma 4 - \delta 4 = 36.870$
$\alpha 4 + \gamma 4 - \beta 4 - \delta 4 = -90.000$
$\alpha 4 + \delta 4 - \beta 4 - \gamma 4 = -126.870$

Switch combination: Right + Lower

Switched anglesDeg:

$$\begin{pmatrix} 180 - \frac{180\,\mathrm{ArcCos}\left[\frac{1}{\sqrt{5}}\right]}{\pi} & \frac{180\,\mathrm{ArcCos}\left[\frac{7}{5\sqrt{2}}\right]}{\pi} & 180 - \frac{180\,\mathrm{ArcCos}\left[-\frac{1}{\sqrt{10}}\right]}{\pi} & 90 \\ 180 - \frac{180\,\mathrm{ArcCos}\left[\frac{1}{4\sqrt{11}}\right]}{\pi} & 180 - \frac{180\,\mathrm{ArcCos}\left[\frac{7\sqrt{\frac{7}{22}}}{4}\right]}{\pi} & \frac{180\,\mathrm{ArcCos}\left[-\frac{1}{2\sqrt{2}}\right]}{\pi} & 90 \\ \frac{180\,\mathrm{ArcCos}\left[\frac{1}{4\sqrt{11}}\right]}{\pi} & \frac{180\,\mathrm{ArcCos}\left[\frac{7\sqrt{\frac{7}{22}}}{4}\right]}{\pi} & \frac{180\,\mathrm{ArcCos}\left[\frac{1}{2\sqrt{2}}\right]}{\pi} & 90 \\ \frac{180\,\mathrm{ArcCos}\left[\frac{1}{\sqrt{5}}\right]}{\pi} & 180 - \frac{180\,\mathrm{ArcCos}\left[\frac{7}{5\sqrt{2}}\right]}{\pi} & 180 - \frac{180\,\mathrm{ArcCos}\left[\frac{1}{\sqrt{10}}\right]}{\pi} & 90 \end{pmatrix}$$

Angle relation checks for i = 1..4:

Vertex 1

$\alpha 1 - \beta 1 = 108.430$
$\alpha 1 - \gamma 1 = 45.000$
$\alpha 1 - \delta 1 = 26.565$
$\beta 1 - \gamma 1 = -63.435$
$\beta 1 - \delta 1 = -81.870$
$\gamma 1 - \delta 1 = -18.435$
$\alpha 1 + \beta 1 - 180 = -55.305$
$\gamma 1 + \delta 1 - 180 = -18.435$
$\alpha 1 + \gamma 1 - 180 = 8.130$
$\beta 1 + \delta 1 - 180 = -81.870$
$\alpha 1 + \delta 1 - 180 = 26.565$
$\beta 1 + \gamma 1 - 180 = -100.300$
$\alpha 1 + \beta 1 - \gamma 1 - \delta 1 = -36.870$
$\alpha 1 + \gamma 1 - \beta 1 - \delta 1 = 90.000$
$\alpha 1 + \delta 1 - \beta 1 - \gamma 1 = 126.870$

Vertex 2

$\alpha 2 - \beta 2 = -76.476$
$\alpha 2 - \gamma 2 = -16.382$
$\alpha 2 - \delta 2 = 4.323$
$\beta 2 - \gamma 2 = 60.094$
$\beta 2 - \delta 2 = 80.799$
$\gamma 2 - \delta 2 = 20.705$
$\alpha 2 + \beta 2 - 180 = 85.122$
$\gamma 2 + \delta 2 - 180 = 20.705$
$\alpha 2 + \gamma 2 - 180 = 25.028$
$\beta 2 + \delta 2 - 180 = 80.799$
$\alpha 2 + \delta 2 - 180 = 4.323$
$\beta 2 + \gamma 2 - 180 = 101.500$
$\alpha 2 + \beta 2 - \gamma 2 - \delta 2 = 64.417$
$\alpha 2 + \gamma 2 - \beta 2 - \delta 2 = -55.771$
$\alpha 2 + \delta 2 - \beta 2 - \gamma 2 = -97.181$

Vertex 3

$\alpha 3 - \beta 3 = 76.476$
$\alpha 3 - \gamma 3 = 16.382$
$\alpha 3 - \delta 3 = -4.323$
$\beta 3 - \gamma 3 = -60.094$
$\beta 3 - \delta 3 = -80.799$
$\gamma 3 - \delta 3 = -20.705$
$\alpha 3 + \beta 3 - 180 = -85.122$

$\gamma 3 + \delta 3 - 180 = -20.705$

$\alpha 3 + \gamma 3 - 180 = -25.028$

$\beta 3 + \delta 3 - 180 = -80.799$

$\alpha 3 + \delta 3 - 180 = -4.323$

$\beta 3 + \gamma 3 - 180 = -101.500$

$\alpha 3 + \beta 3 - \gamma 3 - \delta 3 = -64.417$

$\alpha 3 + \gamma 3 - \beta 3 - \delta 3 = 55.771$

$\alpha 3 + \delta 3 - \beta 3 - \gamma 3 = 97.181$

Vertex 4

$\alpha 4 - \beta 4 = -108.430$

$\alpha 4 - \gamma 4 = -45.000$

$\alpha 4 - \delta 4 = -26.565$

$\beta 4 - \gamma 4 = 63.435$

$\beta 4 - \delta 4 = 81.870$

$\gamma 4 - \delta 4 = 18.435$

$\alpha 4 + \beta 4 - 180 = 55.305$

$\gamma 4 + \delta 4 - 180 = 18.435$

$\alpha 4 + \gamma 4 - 180 = -8.130$

$\beta 4 + \delta 4 - 180 = 81.870$

$\alpha 4 + \delta 4 - 180 = -26.565$

$\beta 4 + \gamma 4 - 180 = 100.300$

$\alpha 4 + \beta 4 - \gamma 4 - \delta 4 = 36.870$

$\alpha 4 + \gamma 4 - \beta 4 - \delta 4 = -90.000$

$\alpha 4 + \delta 4 - \beta 4 - \gamma 4 = -126.870$

Switch combination: Right + Upper

Switched anglesDeg:

$$\begin{pmatrix}
\frac{180\,\mathrm{ArcCos}\left[\frac{1}{\sqrt{5}}\right]}{\pi} & 180-\frac{180\,\mathrm{ArcCos}\left[\frac{7}{5\sqrt{2}}\right]}{\pi} & 180-\frac{180\,\mathrm{ArcCos}\left[-\frac{1}{\sqrt{10}}\right]}{\pi} & 90 \\
\frac{180\,\mathrm{ArcCos}\left[\frac{1}{4\sqrt{11}}\right]}{\pi} & \frac{180\,\mathrm{ArcCos}\left[\frac{7\sqrt{\frac{7}{22}}}{4}\right]}{\pi} & \frac{180\,\mathrm{ArcCos}\left[-\frac{1}{2\sqrt{2}}\right]}{\pi} & 90 \\
180-\frac{180\,\mathrm{ArcCos}\left[\frac{1}{4\sqrt{11}}\right]}{\pi} & 180-\frac{180\,\mathrm{ArcCos}\left[\frac{7\sqrt{\frac{7}{22}}}{4}\right]}{\pi} & \frac{180\,\mathrm{ArcCos}\left[\frac{1}{2\sqrt{2}}\right]}{\pi} & 90 \\
180-\frac{180\,\mathrm{ArcCos}\left[\frac{1}{\sqrt{5}}\right]}{\pi} & \frac{180\,\mathrm{ArcCos}\left[\frac{7}{5\sqrt{2}}\right]}{\pi} & 180-\frac{180\,\mathrm{ArcCos}\left[\frac{1}{\sqrt{10}}\right]}{\pi} & 90
\end{pmatrix}$$

Angle relation checks for i = 1..4:

Vertex 1

$\alpha 1 - \beta 1 = -108.430$

$\alpha 1 - \gamma 1 = -8.130$

$\alpha 1 - \delta 1 = -26.565$

$\beta 1 - \gamma 1 = 100.300$

$\beta 1 - \delta 1 = 81.870$

$\gamma 1 - \delta 1 = -18.435$

$\alpha 1 + \beta 1 - 180 = 55.305$

$\gamma 1 + \delta 1 - 180 = -18.435$

$\alpha 1 + \gamma 1 - 180 = -45.000$

$\beta 1 + \delta 1 - 180 = 81.870$

$\alpha 1 + \delta 1 - 180 = -26.565$

$\beta 1 + \gamma 1 - 180 = 63.435$

$\alpha 1 + \beta 1 - \gamma 1 - \delta 1 = 73.740$

$\alpha 1 + \gamma 1 - \beta 1 - \delta 1 = -126.870$

$\alpha 1 + \delta 1 - \beta 1 - \gamma 1 = -90.000$

Vertex 2

$\alpha 2 - \beta 2 = 76.476$

$\alpha 2 - \gamma 2 = -25.028$

$\alpha 2 - \delta 2 = -4.323$
$\beta 2 - \gamma 2 = -101.500$
$\beta 2 - \delta 2 = -80.799$
$\gamma 2 - \delta 2 = 20.705$
$\alpha 2 + \beta 2 - 180 = -85.122$
$\gamma 2 + \delta 2 - 180 = 20.705$
$\alpha 2 + \gamma 2 - 180 = 16.382$
$\beta 2 + \delta 2 - 180 = -80.799$
$\alpha 2 + \delta 2 - 180 = -4.323$
$\beta 2 + \gamma 2 - 180 = -60.094$
$\alpha 2 + \beta 2 - \gamma 2 - \delta 2 = -105.830$
$\alpha 2 + \gamma 2 - \beta 2 - \delta 2 = 97.181$
$\alpha 2 + \delta 2 - \beta 2 - \gamma 2 = 55.771$

Vertex 3
$\alpha 3 - \beta 3 = -76.476$
$\alpha 3 - \gamma 3 = 25.028$
$\alpha 3 - \delta 3 = 4.323$
$\beta 3 - \gamma 3 = 101.500$
$\beta 3 - \delta 3 = 80.799$
$\gamma 3 - \delta 3 = -20.705$
$\alpha 3 + \beta 3 - 180 = 85.122$
$\gamma 3 + \delta 3 - 180 = -20.705$
$\alpha 3 + \gamma 3 - 180 = -16.382$
$\beta 3 + \delta 3 - 180 = 80.799$
$\alpha 3 + \delta 3 - 180 = 4.323$
$\beta 3 + \gamma 3 - 180 = 60.094$
$\alpha 3 + \beta 3 - \gamma 3 - \delta 3 = 105.830$
$\alpha 3 + \gamma 3 - \beta 3 - \delta 3 = -97.181$
$\alpha 3 + \delta 3 - \beta 3 - \gamma 3 = -55.771$

Vertex 4
$\alpha 4 - \beta 4 = 108.430$
$\alpha 4 - \gamma 4 = 8.130$
$\alpha 4 - \delta 4 = 26.565$
$\beta 4 - \gamma 4 = -100.300$
$\beta 4 - \delta 4 = -81.870$
$\gamma 4 - \delta 4 = 18.435$
$\alpha 4 + \beta 4 - 180 = -55.305$
$\gamma 4 + \delta 4 - 180 = 18.435$
$\alpha 4 + \gamma 4 - 180 = 45.000$
$\beta 4 + \delta 4 - 180 = -81.870$
$\alpha 4 + \delta 4 - 180 = 26.565$
$\beta 4 + \gamma 4 - 180 = -63.435$
$\alpha 4 + \beta 4 - \gamma 4 - \delta 4 = -73.740$
$\alpha 4 + \gamma 4 - \beta 4 - \delta 4 = 126.870$
$\alpha 4 + \delta 4 - \beta 4 - \gamma 4 = 90.000$

Switch combination: Left + Lower

Switched anglesDeg:

$$\begin{pmatrix} 180 - \frac{180\,\text{ArcCos}\left[\frac{1}{\sqrt{5}}\right]}{\pi} & 180 - \frac{180\,\text{ArcCos}\left[\frac{7}{5\sqrt{2}}\right]}{\pi} & \frac{180\,\text{ArcCos}\left[-\frac{1}{\sqrt{10}}\right]}{\pi} & 90 \\ 180 - \frac{180\,\text{ArcCos}\left[\frac{1}{4\sqrt{11}}\right]}{\pi} & \frac{180\,\text{ArcCos}\left[\frac{7\sqrt{\frac{7}{22}}}{4}\right]}{\pi} & 180 - \frac{180\,\text{ArcCos}\left[-\frac{1}{2\sqrt{2}}\right]}{\pi} & 90 \\ \frac{180\,\text{ArcCos}\left[\frac{1}{4\sqrt{11}}\right]}{\pi} & 180 - \frac{180\,\text{ArcCos}\left[\frac{7\sqrt{\frac{7}{22}}}{4}\right]}{\pi} & 180 - \frac{180\,\text{ArcCos}\left[\frac{1}{2\sqrt{2}}\right]}{\pi} & 90 \\ \frac{180\,\text{ArcCos}\left[\frac{1}{\sqrt{5}}\right]}{\pi} & \frac{180\,\text{ArcCos}\left[\frac{7}{5\sqrt{2}}\right]}{\pi} & \frac{180\,\text{ArcCos}\left[\frac{1}{\sqrt{10}}\right]}{\pi} & 90 \end{pmatrix}$$

Angle relation checks for i = 1..4:

Vertex 1

$\alpha 1 - \beta 1 = -55.305$
$\alpha 1 - \gamma 1 = 8.130$
$\alpha 1 - \delta 1 = 26.565$
$\beta 1 - \gamma 1 = 63.435$
$\beta 1 - \delta 1 = 81.870$
$\gamma 1 - \delta 1 = 18.435$
$\alpha 1 + \beta 1 - 180 = 108.430$
$\gamma 1 + \delta 1 - 180 = 18.435$
$\alpha 1 + \gamma 1 - 180 = 45.000$
$\beta 1 + \delta 1 - 180 = 81.870$
$\alpha 1 + \delta 1 - 180 = 26.565$
$\beta 1 + \gamma 1 - 180 = 100.300$
$\alpha 1 + \beta 1 - \gamma 1 - \delta 1 = 90.000$
$\alpha 1 + \gamma 1 - \beta 1 - \delta 1 = -36.870$
$\alpha 1 + \delta 1 - \beta 1 - \gamma 1 = -73.740$

Vertex 2

$\alpha 2 - \beta 2 = 85.122$
$\alpha 2 - \gamma 2 = 25.028$
$\alpha 2 - \delta 2 = 4.323$
$\beta 2 - \gamma 2 = -60.094$
$\beta 2 - \delta 2 = -80.799$
$\gamma 2 - \delta 2 = -20.705$
$\alpha 2 + \beta 2 - 180 = -76.476$
$\gamma 2 + \delta 2 - 180 = -20.705$
$\alpha 2 + \gamma 2 - 180 = -16.382$
$\beta 2 + \delta 2 - 180 = -80.799$
$\alpha 2 + \delta 2 - 180 = 4.323$
$\beta 2 + \gamma 2 - 180 = -101.500$
$\alpha 2 + \beta 2 - \gamma 2 - \delta 2 = -55.771$
$\alpha 2 + \gamma 2 - \beta 2 - \delta 2 = 64.417$
$\alpha 2 + \delta 2 - \beta 2 - \gamma 2 = 105.830$

Vertex 3

$\alpha 3 - \beta 3 = -85.122$
$\alpha 3 - \gamma 3 = -25.028$
$\alpha 3 - \delta 3 = -4.323$
$\beta 3 - \gamma 3 = 60.094$
$\beta 3 - \delta 3 = 80.799$
$\gamma 3 - \delta 3 = 20.705$
$\alpha 3 + \beta 3 - 180 = 76.476$
$\gamma 3 + \delta 3 - 180 = 20.705$
$\alpha 3 + \gamma 3 - 180 = 16.382$
$\beta 3 + \delta 3 - 180 = 80.799$
$\alpha 3 + \delta 3 - 180 = -4.323$
$\beta 3 + \gamma 3 - 180 = 101.500$
$\alpha 3 + \beta 3 - \gamma 3 - \delta 3 = 55.771$
$\alpha 3 + \gamma 3 - \beta 3 - \delta 3 = -64.417$
$\alpha 3 + \delta 3 - \beta 3 - \gamma 3 = -105.830$

Vertex 4

$\alpha 4 - \beta 4 = 55.305$
$\alpha 4 - \gamma 4 = -8.130$
$\alpha 4 - \delta 4 = -26.565$
$\beta 4 - \gamma 4 = -63.435$
$\beta 4 - \delta 4 = -81.870$
$\gamma 4 - \delta 4 = -18.435$
$\alpha 4 + \beta 4 - 180 = -108.430$
$\gamma 4 + \delta 4 - 180 = -18.435$

$\alpha 4 + \gamma 4 - 180 = -45.000$
$\beta 4 + \delta 4 - 180 = -81.870$
$\alpha 4 + \delta 4 - 180 = -26.565$
$\beta 4 + \gamma 4 - 180 = -100.300$
$\alpha 4 + \beta 4 - \gamma 4 - \delta 4 = -90.000$
$\alpha 4 + \gamma 4 - \beta 4 - \delta 4 = 36.870$
$\alpha 4 + \delta 4 - \beta 4 - \gamma 4 = 73.740$

Switch combination: Left + Upper

Switched anglesDeg:

$$\begin{pmatrix} \frac{180\,\mathrm{ArcCos}\left[\frac{1}{\sqrt{5}}\right]}{\pi} & \frac{180\,\mathrm{ArcCos}\left[\frac{7}{5\sqrt{2}}\right]}{\pi} & \frac{180\,\mathrm{ArcCos}\left[-\frac{1}{\sqrt{10}}\right]}{\pi} & 90 \\ \frac{180\,\mathrm{ArcCos}\left[\frac{1}{4\sqrt{11}}\right]}{\pi} & 180-\frac{180\,\mathrm{ArcCos}\left[\frac{7\sqrt{\frac{7}{22}}}{4}\right]}{\pi} & 180-\frac{180\,\mathrm{ArcCos}\left[-\frac{1}{2\sqrt{2}}\right]}{\pi} & 90 \\ 180-\frac{180\,\mathrm{ArcCos}\left[\frac{1}{4\sqrt{11}}\right]}{\pi} & \frac{180\,\mathrm{ArcCos}\left[\frac{7\sqrt{\frac{7}{22}}}{4}\right]}{\pi} & 180-\frac{180\,\mathrm{ArcCos}\left[\frac{1}{2\sqrt{2}}\right]}{\pi} & 90 \\ 180-\frac{180\,\mathrm{ArcCos}\left[\frac{1}{\sqrt{5}}\right]}{\pi} & 180-\frac{180\,\mathrm{ArcCos}\left[\frac{7}{5\sqrt{2}}\right]}{\pi} & \frac{180\,\mathrm{ArcCos}\left[\frac{1}{\sqrt{10}}\right]}{\pi} & 90 \end{pmatrix}$$

Angle relation checks for i = 1..4:

Vertex 1
$\alpha 1 - \beta 1 = 55.305$
$\alpha 1 - \gamma 1 = -45.000$
$\alpha 1 - \delta 1 = -26.565$
$\beta 1 - \gamma 1 = -100.300$
$\beta 1 - \delta 1 = -81.870$
$\gamma 1 - \delta 1 = 18.435$
$\alpha 1 + \beta 1 - 180 = -108.430$
$\gamma 1 + \delta 1 - 180 = 18.435$
$\alpha 1 + \gamma 1 - 180 = -8.130$
$\beta 1 + \delta 1 - 180 = -81.870$
$\alpha 1 + \delta 1 - 180 = -26.565$
$\beta 1 + \gamma 1 - 180 = -63.435$
$\alpha 1 + \beta 1 - \gamma 1 - \delta 1 = -126.870$
$\alpha 1 + \gamma 1 - \beta 1 - \delta 1 = 73.740$
$\alpha 1 + \delta 1 - \beta 1 - \gamma 1 = 36.870$

Vertex 2
$\alpha 2 - \beta 2 = -85.122$
$\alpha 2 - \gamma 2 = 16.382$
$\alpha 2 - \delta 2 = -4.323$
$\beta 2 - \gamma 2 = 101.500$
$\beta 2 - \delta 2 = 80.799$
$\gamma 2 - \delta 2 = -20.705$
$\alpha 2 + \beta 2 - 180 = 76.476$
$\gamma 2 + \delta 2 - 180 = -20.705$
$\alpha 2 + \gamma 2 - 180 = -25.028$
$\beta 2 + \delta 2 - 180 = 80.799$
$\alpha 2 + \delta 2 - 180 = -4.323$
$\beta 2 + \gamma 2 - 180 = 60.094$
$\alpha 2 + \beta 2 - \gamma 2 - \delta 2 = 97.181$
$\alpha 2 + \gamma 2 - \beta 2 - \delta 2 = -105.830$
$\alpha 2 + \delta 2 - \beta 2 - \gamma 2 = -64.417$

Vertex 3
$\alpha 3 - \beta 3 = 85.122$
$\alpha 3 - \gamma 3 = -16.382$
$\alpha 3 - \delta 3 = 4.323$
$\beta 3 - \gamma 3 = -101.500$

$\beta 3 - \gamma 3 = -101.500$
$\beta 3 - \delta 3 = -80.799$
$\gamma 3 - \delta 3 = 20.705$
$\alpha 3 + \beta 3 - 180 = -76.476$
$\gamma 3 + \delta 3 - 180 = 20.705$
$\alpha 3 + \gamma 3 - 180 = 25.028$
$\beta 3 + \delta 3 - 180 = -80.799$
$\alpha 3 + \delta 3 - 180 = 4.323$
$\beta 3 + \gamma 3 - 180 = -60.094$
$\alpha 3 + \beta 3 - \gamma 3 - \delta 3 = -97.181$
$\alpha 3 + \gamma 3 - \beta 3 - \delta 3 = 105.830$
$\alpha 3 + \delta 3 - \beta 3 - \gamma 3 = 64.417$

Vertex 4
$\alpha 4 - \beta 4 = -55.305$
$\alpha 4 - \gamma 4 = 45.000$
$\alpha 4 - \delta 4 = 26.565$
$\beta 4 - \gamma 4 = 100.300$
$\beta 4 - \delta 4 = 81.870$
$\gamma 4 - \delta 4 = -18.435$
$\alpha 4 + \beta 4 - 180 = 108.430$
$\gamma 4 + \delta 4 - 180 = -18.435$
$\alpha 4 + \gamma 4 - 180 = 8.130$
$\beta 4 + \delta 4 - 180 = 81.870$
$\alpha 4 + \delta 4 - 180 = 26.565$
$\beta 4 + \gamma 4 - 180 = 63.435$
$\alpha 4 + \beta 4 - \gamma 4 - \delta 4 = 126.870$
$\alpha 4 + \gamma 4 - \beta 4 - \delta 4 = -73.740$
$\alpha 4 + \delta 4 - \beta 4 - \gamma 4 = -36.870$

Switch combination: Lower + Upper

Switched anglesDeg:

$$\begin{pmatrix} 180-\frac{180\,\mathrm{ArcCos}\left[\frac{1}{\sqrt{5}}\right]}{\pi} & 180-\frac{180\,\mathrm{ArcCos}\left[\frac{7}{5\sqrt{2}}\right]}{\pi} & \frac{180\,\mathrm{ArcCos}\left[-\frac{1}{\sqrt{10}}\right]}{\pi} & 90 \\ 180-\frac{180\,\mathrm{ArcCos}\left[\frac{1}{4\sqrt{11}}\right]}{\pi} & 180-\frac{180\,\mathrm{ArcCos}\left[\frac{7\sqrt{\frac{7}{22}}}{4}\right]}{\pi} & \frac{180\,\mathrm{ArcCos}\left[-\frac{1}{2\sqrt{2}}\right]}{\pi} & 90 \\ 180-\frac{180\,\mathrm{ArcCos}\left[\frac{1}{4\sqrt{11}}\right]}{\pi} & 180-\frac{180\,\mathrm{ArcCos}\left[\frac{7\sqrt{\frac{7}{22}}}{4}\right]}{\pi} & \frac{180\,\mathrm{ArcCos}\left[\frac{1}{2\sqrt{2}}\right]}{\pi} & 90 \\ 180-\frac{180\,\mathrm{ArcCos}\left[\frac{1}{\sqrt{5}}\right]}{\pi} & 180-\frac{180\,\mathrm{ArcCos}\left[\frac{7}{5\sqrt{2}}\right]}{\pi} & \frac{180\,\mathrm{ArcCos}\left[\frac{1}{\sqrt{10}}\right]}{\pi} & 90 \end{pmatrix}$$

Angle relation checks for i = 1..4:

Vertex 1
$\alpha 1 - \beta 1 = -55.305$
$\alpha 1 - \gamma 1 = 8.130$
$\alpha 1 - \delta 1 = 26.565$
$\beta 1 - \gamma 1 = 63.435$
$\beta 1 - \delta 1 = 81.870$
$\gamma 1 - \delta 1 = 18.435$
$\alpha 1 + \beta 1 - 180 = 108.430$
$\gamma 1 + \delta 1 - 180 = 18.435$
$\alpha 1 + \gamma 1 - 180 = 45.000$
$\beta 1 + \delta 1 - 180 = 81.870$
$\alpha 1 + \delta 1 - 180 = 26.565$
$\beta 1 + \gamma 1 - 180 = 100.300$
$\alpha 1 + \beta 1 - \gamma 1 - \delta 1 = 90.000$
$\alpha 1 + \gamma 1 - \beta 1 - \delta 1 = -36.870$
$\alpha 1 + \delta 1 - \beta 1 - \gamma 1 = -73.740$

Vertex 2
$\alpha2 - \beta2 = -76.476$
$\alpha2 - \gamma2 = -16.382$
$\alpha2 - \delta2 = 4.323$
$\beta2 - \gamma2 = 60.094$
$\beta2 - \delta2 = 80.799$
$\gamma2 - \delta2 = 20.705$
$\alpha2 + \beta2 - 180 = 85.122$
$\gamma2 + \delta2 - 180 = 20.705$
$\alpha2 + \gamma2 - 180 = 25.028$
$\beta2 + \delta2 - 180 = 80.799$
$\alpha2 + \delta2 - 180 = 4.323$
$\beta2 + \gamma2 - 180 = 101.500$
$\alpha2 + \beta2 - \gamma2 - \delta2 = 64.417$
$\alpha2 + \gamma2 - \beta2 - \delta2 = -55.771$
$\alpha2 + \delta2 - \beta2 - \gamma2 = -97.181$

Vertex 3
$\alpha3 - \beta3 = -76.476$
$\alpha3 - \gamma3 = 25.028$
$\alpha3 - \delta3 = 4.323$
$\beta3 - \gamma3 = 101.500$
$\beta3 - \delta3 = 80.799$
$\gamma3 - \delta3 = -20.705$
$\alpha3 + \beta3 - 180 = 85.122$
$\gamma3 + \delta3 - 180 = -20.705$
$\alpha3 + \gamma3 - 180 = -16.382$
$\beta3 + \delta3 - 180 = 80.799$
$\alpha3 + \delta3 - 180 = 4.323$
$\beta3 + \gamma3 - 180 = 60.094$
$\alpha3 + \beta3 - \gamma3 - \delta3 = 105.830$
$\alpha3 + \gamma3 - \beta3 - \delta3 = -97.181$
$\alpha3 + \delta3 - \beta3 - \gamma3 = -55.771$

Vertex 4
$\alpha4 - \beta4 = -55.305$
$\alpha4 - \gamma4 = 45.000$
$\alpha4 - \delta4 = 26.565$
$\beta4 - \gamma4 = 100.300$
$\beta4 - \delta4 = 81.870$
$\gamma4 - \delta4 = -18.435$
$\alpha4 + \beta4 - 180 = 108.430$
$\gamma4 + \delta4 - 180 = -18.435$
$\alpha4 + \gamma4 - 180 = 8.130$
$\beta4 + \delta4 - 180 = 81.870$
$\alpha4 + \delta4 - 180 = 26.565$
$\beta4 + \gamma4 - 180 = 63.435$
$\alpha4 + \beta4 - \gamma4 - \delta4 = 126.870$
$\alpha4 + \gamma4 - \beta4 - \delta4 = -73.740$
$\alpha4 + \delta4 - \beta4 - \gamma4 = -36.870$

Switch combination: Right + Left + Lower

Switched anglesDeg:

$$\begin{pmatrix} 180-\frac{180\,\mathrm{ArcCos}\left[\frac{1}{\sqrt{5}}\right]}{\pi} & \frac{180\,\mathrm{ArcCos}\left[\frac{7}{5\sqrt{2}}\right]}{\pi} & 180-\frac{180\,\mathrm{ArcCos}\left[-\frac{1}{\sqrt{10}}\right]}{\pi} & 90 \\ 180-\frac{180\,\mathrm{ArcCos}\left[\frac{1}{4\sqrt{11}}\right]}{\pi} & \frac{180\,\mathrm{ArcCos}\left[\frac{7\sqrt{\frac{7}{22}}}{4}\right]}{\pi} & 180-\frac{180\,\mathrm{ArcCos}\left[-\frac{1}{2\sqrt{2}}\right]}{\pi} & 90 \\ \frac{180\,\mathrm{ArcCos}\left[\frac{1}{4\sqrt{11}}\right]}{\pi} & 180-\frac{180\,\mathrm{ArcCos}\left[\frac{7\sqrt{\frac{7}{22}}}{4}\right]}{\pi} & 180-\frac{180\,\mathrm{ArcCos}\left[\frac{1}{2\sqrt{2}}\right]}{\pi} & 90 \\ \frac{180\,\mathrm{ArcCos}\left[\frac{1}{\sqrt{5}}\right]}{\pi} & 180-\frac{180\,\mathrm{ArcCos}\left[\frac{7}{5\sqrt{2}}\right]}{\pi} & 180-\frac{180\,\mathrm{ArcCos}\left[\frac{1}{\sqrt{10}}\right]}{\pi} & 90 \end{pmatrix}$$

Angle relation checks for i = 1..4:

Vertex 1

$\alpha1 - \beta1 = 108.430$
$\alpha1 - \gamma1 = 45.000$
$\alpha1 - \delta1 = 26.565$
$\beta1 - \gamma1 = -63.435$
$\beta1 - \delta1 = -81.870$
$\gamma1 - \delta1 = -18.435$
$\alpha1 + \beta1 - 180 = -55.305$
$\gamma1 + \delta1 - 180 = -18.435$
$\alpha1 + \gamma1 - 180 = 8.130$
$\beta1 + \delta1 - 180 = -81.870$
$\alpha1 + \delta1 - 180 = 26.565$
$\beta1 + \gamma1 - 180 = -100.300$
$\alpha1 + \beta1 - \gamma1 - \delta1 = -36.870$
$\alpha1 + \gamma1 - \beta1 - \delta1 = 90.000$
$\alpha1 + \delta1 - \beta1 - \gamma1 = 126.870$

Vertex 2

$\alpha2 - \beta2 = 85.122$
$\alpha2 - \gamma2 = 25.028$
$\alpha2 - \delta2 = 4.323$
$\beta2 - \gamma2 = -60.094$
$\beta2 - \delta2 = -80.799$
$\gamma2 - \delta2 = -20.705$
$\alpha2 + \beta2 - 180 = -76.476$
$\gamma2 + \delta2 - 180 = -20.705$
$\alpha2 + \gamma2 - 180 = -16.382$
$\beta2 + \delta2 - 180 = -80.799$
$\alpha2 + \delta2 - 180 = 4.323$
$\beta2 + \gamma2 - 180 = -101.500$
$\alpha2 + \beta2 - \gamma2 - \delta2 = -55.771$
$\alpha2 + \gamma2 - \beta2 - \delta2 = 64.417$
$\alpha2 + \delta2 - \beta2 - \gamma2 = 105.830$

Vertex 3

$\alpha3 - \beta3 = -85.122$
$\alpha3 - \gamma3 = -25.028$
$\alpha3 - \delta3 = -4.323$
$\beta3 - \gamma3 = 60.094$
$\beta3 - \delta3 = 80.799$
$\gamma3 - \delta3 = 20.705$
$\alpha3 + \beta3 - 180 = 76.476$
$\gamma3 + \delta3 - 180 = 20.705$
$\alpha3 + \gamma3 - 180 = 16.382$
$\beta3 + \delta3 - 180 = 80.799$
$\alpha3 + \delta3 - 180 = -4.323$
$\beta3 + \gamma3 - 180 = 101.500$
$\alpha3 + \beta3 - \gamma3 - \delta3 = 55.771$
$\alpha3 + \gamma3 - \beta3 - \delta3 = -64.417$
$\alpha3 + \delta3 - \beta3 - \gamma3 = -105.830$

Vertex 4

$\alpha 4 - \beta 4 = -108.430$
$\alpha 4 - \gamma 4 = -45.000$
$\alpha 4 - \delta 4 = -26.565$
$\beta 4 - \gamma 4 = 63.435$
$\beta 4 - \delta 4 = 81.870$
$\gamma 4 - \delta 4 = 18.435$
$\alpha 4 + \beta 4 - 180 = 55.305$
$\gamma 4 + \delta 4 - 180 = 18.435$
$\alpha 4 + \gamma 4 - 180 = -8.130$
$\beta 4 + \delta 4 - 180 = 81.870$
$\alpha 4 + \delta 4 - 180 = -26.565$
$\beta 4 + \gamma 4 - 180 = 100.300$
$\alpha 4 + \beta 4 - \gamma 4 - \delta 4 = 36.870$
$\alpha 4 + \gamma 4 - \beta 4 - \delta 4 = -90.000$
$\alpha 4 + \delta 4 - \beta 4 - \gamma 4 = -126.870$

Switch combination: Right + Left + Upper

Switched anglesDeg:

$$\begin{pmatrix} \frac{180\,\mathrm{ArcCos}\left[\frac{1}{\sqrt{5}}\right]}{\pi} & 180 - \frac{180\,\mathrm{ArcCos}\left[\frac{7}{5\sqrt{2}}\right]}{\pi} & 180 - \frac{180\,\mathrm{ArcCos}\left[-\frac{1}{\sqrt{10}}\right]}{\pi} & 90 \\ \frac{180\,\mathrm{ArcCos}\left[\frac{1}{4\sqrt{11}}\right]}{\pi} & 180 - \frac{180\,\mathrm{ArcCos}\left[\frac{7\sqrt{\frac{7}{22}}}{4}\right]}{\pi} & 180 - \frac{180\,\mathrm{ArcCos}\left[-\frac{1}{2\sqrt{2}}\right]}{\pi} & 90 \\ 180 - \frac{180\,\mathrm{ArcCos}\left[\frac{1}{4\sqrt{11}}\right]}{\pi} & \frac{180\,\mathrm{ArcCos}\left[\frac{7\sqrt{\frac{7}{22}}}{4}\right]}{\pi} & 180 - \frac{180\,\mathrm{ArcCos}\left[\frac{1}{2\sqrt{2}}\right]}{\pi} & 90 \\ 180 - \frac{180\,\mathrm{ArcCos}\left[\frac{1}{\sqrt{5}}\right]}{\pi} & \frac{180\,\mathrm{ArcCos}\left[\frac{7}{5\sqrt{2}}\right]}{\pi} & 180 - \frac{180\,\mathrm{ArcCos}\left[\frac{1}{\sqrt{10}}\right]}{\pi} & 90 \end{pmatrix}$$

Angle relation checks for i = 1..4:

Vertex 1

$\alpha 1 - \beta 1 = -108.430$
$\alpha 1 - \gamma 1 = -8.130$
$\alpha 1 - \delta 1 = -26.565$
$\beta 1 - \gamma 1 = 100.300$
$\beta 1 - \delta 1 = 81.870$
$\gamma 1 - \delta 1 = -18.435$
$\alpha 1 + \beta 1 - 180 = 55.305$
$\gamma 1 + \delta 1 - 180 = -18.435$
$\alpha 1 + \gamma 1 - 180 = -45.000$
$\beta 1 + \delta 1 - 180 = 81.870$
$\alpha 1 + \delta 1 - 180 = -26.565$
$\beta 1 + \gamma 1 - 180 = 63.435$
$\alpha 1 + \beta 1 - \gamma 1 - \delta 1 = 73.740$
$\alpha 1 + \gamma 1 - \beta 1 - \delta 1 = -126.870$
$\alpha 1 + \delta 1 - \beta 1 - \gamma 1 = -90.000$

Vertex 2

$\alpha 2 - \beta 2 = -85.122$
$\alpha 2 - \gamma 2 = 16.382$
$\alpha 2 - \delta 2 = -4.323$
$\beta 2 - \gamma 2 = 101.500$
$\beta 2 - \delta 2 = 80.799$
$\gamma 2 - \delta 2 = -20.705$
$\alpha 2 + \beta 2 - 180 = 76.476$
$\gamma 2 + \delta 2 - 180 = -20.705$
$\alpha 2 + \gamma 2 - 180 = -25.028$
$\beta 2 + \delta 2 - 180 = 80.799$
$\alpha 2 + \delta 2 - 180 = -4.323$

$\beta 2 + \gamma 2 - 180 = 60.094$
$\alpha 2 + \beta 2 - \gamma 2 - \delta 2 = 97.181$
$\alpha 2 + \gamma 2 - \beta 2 - \delta 2 = -105.830$
$\alpha 2 + \delta 2 - \beta 2 - \gamma 2 = -64.417$

Vertex 3
$\alpha 3 - \beta 3 = 85.122$
$\alpha 3 - \gamma 3 = -16.382$
$\alpha 3 - \delta 3 = 4.323$
$\beta 3 - \gamma 3 = -101.500$
$\beta 3 - \delta 3 = -80.799$
$\gamma 3 - \delta 3 = 20.705$
$\alpha 3 + \beta 3 - 180 = -76.476$
$\gamma 3 + \delta 3 - 180 = 20.705$
$\alpha 3 + \gamma 3 - 180 = 25.028$
$\beta 3 + \delta 3 - 180 = -80.799$
$\alpha 3 + \delta 3 - 180 = 4.323$
$\beta 3 + \gamma 3 - 180 = -60.094$
$\alpha 3 + \beta 3 - \gamma 3 - \delta 3 = -97.181$
$\alpha 3 + \gamma 3 - \beta 3 - \delta 3 = 105.830$
$\alpha 3 + \delta 3 - \beta 3 - \gamma 3 = 64.417$

Vertex 4
$\alpha 4 - \beta 4 = 108.430$
$\alpha 4 - \gamma 4 = 8.130$
$\alpha 4 - \delta 4 = 26.565$
$\beta 4 - \gamma 4 = -100.300$
$\beta 4 - \delta 4 = -81.870$
$\gamma 4 - \delta 4 = 18.435$
$\alpha 4 + \beta 4 - 180 = -55.305$
$\gamma 4 + \delta 4 - 180 = 18.435$
$\alpha 4 + \gamma 4 - 180 = 45.000$
$\beta 4 + \delta 4 - 180 = -81.870$
$\alpha 4 + \delta 4 - 180 = 26.565$
$\beta 4 + \gamma 4 - 180 = -63.435$
$\alpha 4 + \beta 4 - \gamma 4 - \delta 4 = -73.740$
$\alpha 4 + \gamma 4 - \beta 4 - \delta 4 = 126.870$
$\alpha 4 + \delta 4 - \beta 4 - \gamma 4 = 90.000$

Switch combination: Right + Lower + Upper

Switched anglesDeg:

$$\begin{pmatrix} 180 - \frac{180\,\mathrm{ArcCos}\left[\frac{1}{\sqrt{5}}\right]}{\pi} & \frac{180\,\mathrm{ArcCos}\left[\frac{7}{5\sqrt{2}}\right]}{\pi} & 180 - \frac{180\,\mathrm{ArcCos}\left[-\frac{1}{\sqrt{10}}\right]}{\pi} & 90 \\ 180 - \frac{180\,\mathrm{ArcCos}\left[\frac{1}{4\sqrt{11}}\right]}{\pi} & 180 - \frac{180\,\mathrm{ArcCos}\left[\frac{7\sqrt{\frac{7}{22}}}{4}\right]}{\pi} & \frac{180\,\mathrm{ArcCos}\left[-\frac{1}{2\sqrt{2}}\right]}{\pi} & 90 \\ 180 - \frac{180\,\mathrm{ArcCos}\left[\frac{1}{4\sqrt{11}}\right]}{\pi} & 180 - \frac{180\,\mathrm{ArcCos}\left[\frac{7\sqrt{\frac{7}{22}}}{4}\right]}{\pi} & \frac{180\,\mathrm{ArcCos}\left[\frac{1}{2\sqrt{2}}\right]}{\pi} & 90 \\ 180 - \frac{180\,\mathrm{ArcCos}\left[\frac{1}{\sqrt{5}}\right]}{\pi} & \frac{180\,\mathrm{ArcCos}\left[\frac{7}{5\sqrt{2}}\right]}{\pi} & 180 - \frac{180\,\mathrm{ArcCos}\left[\frac{1}{\sqrt{10}}\right]}{\pi} & 90 \end{pmatrix}$$

Angle relation checks for i = 1..4:

Vertex 1
$\alpha 1 - \beta 1 = 108.430$
$\alpha 1 - \gamma 1 = 45.000$
$\alpha 1 - \delta 1 = 26.565$
$\beta 1 - \gamma 1 = -63.435$
$\beta 1 - \delta 1 = -81.870$
$\gamma 1 - \delta 1 = -18.435$

$\alpha1 + \beta1 - 180 = -55.305$
$\gamma1 + \delta1 - 180 = -18.435$
$\alpha1 + \gamma1 - 180 = 8.130$
$\beta1 + \delta1 - 180 = -81.870$
$\alpha1 + \delta1 - 180 = 26.565$
$\beta1 + \gamma1 - 180 = -100.300$
$\alpha1 + \beta1 - \gamma1 - \delta1 = -36.870$
$\alpha1 + \gamma1 - \beta1 - \delta1 = 90.000$
$\alpha1 + \delta1 - \beta1 - \gamma1 = 126.870$

Vertex 2
$\alpha2 - \beta2 = -76.476$
$\alpha2 - \gamma2 = -16.382$
$\alpha2 - \delta2 = 4.323$
$\beta2 - \gamma2 = 60.094$
$\beta2 - \delta2 = 80.799$
$\gamma2 - \delta2 = 20.705$
$\alpha2 + \beta2 - 180 = 85.122$
$\gamma2 + \delta2 - 180 = 20.705$
$\alpha2 + \gamma2 - 180 = 25.028$
$\beta2 + \delta2 - 180 = 80.799$
$\alpha2 + \delta2 - 180 = 4.323$
$\beta2 + \gamma2 - 180 = 101.500$
$\alpha2 + \beta2 - \gamma2 - \delta2 = 64.417$
$\alpha2 + \gamma2 - \beta2 - \delta2 = -55.771$
$\alpha2 + \delta2 - \beta2 - \gamma2 = -97.181$

Vertex 3
$\alpha3 - \beta3 = -76.476$
$\alpha3 - \gamma3 = 25.028$
$\alpha3 - \delta3 = 4.323$
$\beta3 - \gamma3 = 101.500$
$\beta3 - \delta3 = 80.799$
$\gamma3 - \delta3 = -20.705$
$\alpha3 + \beta3 - 180 = 85.122$
$\gamma3 + \delta3 - 180 = -20.705$
$\alpha3 + \gamma3 - 180 = -16.382$
$\beta3 + \delta3 - 180 = 80.799$
$\alpha3 + \delta3 - 180 = 4.323$
$\beta3 + \gamma3 - 180 = 60.094$
$\alpha3 + \beta3 - \gamma3 - \delta3 = 105.830$
$\alpha3 + \gamma3 - \beta3 - \delta3 = -97.181$
$\alpha3 + \delta3 - \beta3 - \gamma3 = -55.771$

Vertex 4
$\alpha4 - \beta4 = 108.430$
$\alpha4 - \gamma4 = 8.130$
$\alpha4 - \delta4 = 26.565$
$\beta4 - \gamma4 = -100.300$
$\beta4 - \delta4 = -81.870$
$\gamma4 - \delta4 = 18.435$
$\alpha4 + \beta4 - 180 = -55.305$
$\gamma4 + \delta4 - 180 = 18.435$
$\alpha4 + \gamma4 - 180 = 45.000$
$\beta4 + \delta4 - 180 = -81.870$
$\alpha4 + \delta4 - 180 = 26.565$
$\beta4 + \gamma4 - 180 = -63.435$
$\alpha4 + \beta4 - \gamma4 - \delta4 = -73.740$
$\alpha4 + \gamma4 - \beta4 - \delta4 = 126.870$
$\alpha4 + \delta4 - \beta4 - \gamma4 = 90.000$

Switch combination: Left + Lower + Upper

Switched anglesDeg:

$$\begin{pmatrix} 180-\frac{180\,\text{ArcCos}\left[\frac{1}{\sqrt{5}}\right]}{\pi} & 180-\frac{180\,\text{ArcCos}\left[\frac{7}{5\sqrt{2}}\right]}{\pi} & \frac{180\,\text{ArcCos}\left[-\frac{1}{\sqrt{10}}\right]}{\pi} & 90 \\ 180-\frac{180\,\text{ArcCos}\left[\frac{1}{4\sqrt{11}}\right]}{\pi} & \frac{180\,\text{ArcCos}\left[\frac{7\sqrt{\frac{7}{22}}}{4}\right]}{\pi} & 180-\frac{180\,\text{ArcCos}\left[-\frac{1}{2\sqrt{2}}\right]}{\pi} & 90 \\ 180-\frac{180\,\text{ArcCos}\left[\frac{1}{4\sqrt{11}}\right]}{\pi} & \frac{180\,\text{ArcCos}\left[\frac{7\sqrt{\frac{7}{22}}}{4}\right]}{\pi} & 180-\frac{180\,\text{ArcCos}\left[\frac{1}{2\sqrt{2}}\right]}{\pi} & 90 \\ 180-\frac{180\,\text{ArcCos}\left[\frac{1}{\sqrt{5}}\right]}{\pi} & 180-\frac{180\,\text{ArcCos}\left[\frac{7}{5\sqrt{2}}\right]}{\pi} & \frac{180\,\text{ArcCos}\left[\frac{1}{\sqrt{10}}\right]}{\pi} & 90 \end{pmatrix}$$

Angle relation checks for i = 1..4:

Vertex 1

$\alpha1 - \beta1 = -55.305$
$\alpha1 - \gamma1 = 8.130$
$\alpha1 - \delta1 = 26.565$
$\beta1 - \gamma1 = 63.435$
$\beta1 - \delta1 = 81.870$
$\gamma1 - \delta1 = 18.435$
$\alpha1 + \beta1 - 180 = 108.430$
$\gamma1 + \delta1 - 180 = 18.435$
$\alpha1 + \gamma1 - 180 = 45.000$
$\beta1 + \delta1 - 180 = 81.870$
$\alpha1 + \delta1 - 180 = 26.565$
$\beta1 + \gamma1 - 180 = 100.300$
$\alpha1 + \beta1 - \gamma1 - \delta1 = 90.000$
$\alpha1 + \gamma1 - \beta1 - \delta1 = -36.870$
$\alpha1 + \delta1 - \beta1 - \gamma1 = -73.740$

Vertex 2

$\alpha2 - \beta2 = 85.122$
$\alpha2 - \gamma2 = 25.028$
$\alpha2 - \delta2 = 4.323$
$\beta2 - \gamma2 = -60.094$
$\beta2 - \delta2 = -80.799$
$\gamma2 - \delta2 = -20.705$
$\alpha2 + \beta2 - 180 = -76.476$
$\gamma2 + \delta2 - 180 = -20.705$
$\alpha2 + \gamma2 - 180 = -16.382$
$\beta2 + \delta2 - 180 = -80.799$
$\alpha2 + \delta2 - 180 = 4.323$
$\beta2 + \gamma2 - 180 = -101.500$
$\alpha2 + \beta2 - \gamma2 - \delta2 = -55.771$
$\alpha2 + \gamma2 - \beta2 - \delta2 = 64.417$
$\alpha2 + \delta2 - \beta2 - \gamma2 = 105.830$

Vertex 3

$\alpha3 - \beta3 = 85.122$
$\alpha3 - \gamma3 = -16.382$
$\alpha3 - \delta3 = 4.323$
$\beta3 - \gamma3 = -101.500$
$\beta3 - \delta3 = -80.799$
$\gamma3 - \delta3 = 20.705$
$\alpha3 + \beta3 - 180 = -76.476$
$\gamma3 + \delta3 - 180 = 20.705$
$\alpha3 + \gamma3 - 180 = 25.028$
$\beta3 + \delta3 - 180 = -80.799$
$\alpha3 + \delta3 - 180 = 4.323$

$\beta 3 + \gamma 3 - 180 = -60.094$
$\alpha 3 + \beta 3 - \gamma 3 - \delta 3 = -97.181$
$\alpha 3 + \gamma 3 - \beta 3 - \delta 3 = 105.830$
$\alpha 3 + \delta 3 - \beta 3 - \gamma 3 = 64.417$

Vertex 4
$\alpha 4 - \beta 4 = -55.305$
$\alpha 4 - \gamma 4 = 45.000$
$\alpha 4 - \delta 4 = 26.565$
$\beta 4 - \gamma 4 = 100.300$
$\beta 4 - \delta 4 = 81.870$
$\gamma 4 - \delta 4 = -18.435$
$\alpha 4 + \beta 4 - 180 = 108.430$
$\gamma 4 + \delta 4 - 180 = -18.435$
$\alpha 4 + \gamma 4 - 180 = 8.130$
$\beta 4 + \delta 4 - 180 = 81.870$
$\alpha 4 + \delta 4 - 180 = 26.565$
$\beta 4 + \gamma 4 - 180 = 63.435$
$\alpha 4 + \beta 4 - \gamma 4 - \delta 4 = 126.870$
$\alpha 4 + \gamma 4 - \beta 4 - \delta 4 = -73.740$
$\alpha 4 + \delta 4 - \beta 4 - \gamma 4 = -36.870$

Switch combination: Right + Left + Lower + Upper

Switched anglesDeg:

$$\begin{pmatrix} 180 - \frac{180\,\mathrm{ArcCos}\left[\frac{1}{\sqrt{5}}\right]}{\pi} & \frac{180\,\mathrm{ArcCos}\left[\frac{7}{5\sqrt{2}}\right]}{\pi} & 180 - \frac{180\,\mathrm{ArcCos}\left[-\frac{1}{\sqrt{10}}\right]}{\pi} & 90 \\ 180 - \frac{180\,\mathrm{ArcCos}\left[\frac{1}{4\sqrt{11}}\right]}{\pi} & \frac{180\,\mathrm{ArcCos}\left[\frac{7\sqrt{\frac{7}{22}}}{4}\right]}{\pi} & 180 - \frac{180\,\mathrm{ArcCos}\left[-\frac{1}{2\sqrt{2}}\right]}{\pi} & 90 \\ 180 - \frac{180\,\mathrm{ArcCos}\left[\frac{1}{4\sqrt{11}}\right]}{\pi} & \frac{180\,\mathrm{ArcCos}\left[\frac{7\sqrt{\frac{7}{22}}}{4}\right]}{\pi} & 180 - \frac{180\,\mathrm{ArcCos}\left[\frac{1}{2\sqrt{2}}\right]}{\pi} & 90 \\ 180 - \frac{180\,\mathrm{ArcCos}\left[\frac{1}{\sqrt{5}}\right]}{\pi} & \frac{180\,\mathrm{ArcCos}\left[\frac{7}{5\sqrt{2}}\right]}{\pi} & 180 - \frac{180\,\mathrm{ArcCos}\left[\frac{1}{\sqrt{10}}\right]}{\pi} & 90 \end{pmatrix}$$

Angle relation checks for i = 1..4:

Vertex 1
$\alpha 1 - \beta 1 = 108.430$
$\alpha 1 - \gamma 1 = 45.000$
$\alpha 1 - \delta 1 = 26.565$
$\beta 1 - \gamma 1 = -63.435$
$\beta 1 - \delta 1 = -81.870$
$\gamma 1 - \delta 1 = -18.435$
$\alpha 1 + \beta 1 - 180 = -55.305$
$\gamma 1 + \delta 1 - 180 = -18.435$
$\alpha 1 + \gamma 1 - 180 = 8.130$
$\beta 1 + \delta 1 - 180 = -81.870$
$\alpha 1 + \delta 1 - 180 = 26.565$
$\beta 1 + \gamma 1 - 180 = -100.300$
$\alpha 1 + \beta 1 - \gamma 1 - \delta 1 = -36.870$
$\alpha 1 + \gamma 1 - \beta 1 - \delta 1 = 90.000$
$\alpha 1 + \delta 1 - \beta 1 - \gamma 1 = 126.870$

Vertex 2
$\alpha 2 - \beta 2 = 85.122$
$\alpha 2 - \gamma 2 = 25.028$
$\alpha 2 - \delta 2 = 4.323$
$\beta 2 - \gamma 2 = -60.094$
$\beta 2 - \delta 2 = -80.799$
$\gamma 2 - \delta 2 = -20.705$

$\alpha 2 + \beta 2 - 180 = -76.476$
$\gamma 2 + \delta 2 - 180 = -20.705$
$\alpha 2 + \gamma 2 - 180 = -16.382$
$\beta 2 + \delta 2 - 180 = -80.799$
$\alpha 2 + \delta 2 - 180 = 4.323$
$\beta 2 + \gamma 2 - 180 = -101.500$
$\alpha 2 + \beta 2 - \gamma 2 - \delta 2 = -55.771$
$\alpha 2 + \gamma 2 - \beta 2 - \delta 2 = 64.417$
$\alpha 2 + \delta 2 - \beta 2 - \gamma 2 = 105.830$

Vertex 3
$\alpha 3 - \beta 3 = 85.122$
$\alpha 3 - \gamma 3 = -16.382$
$\alpha 3 - \delta 3 = 4.323$
$\beta 3 - \gamma 3 = -101.500$
$\beta 3 - \delta 3 = -80.799$
$\gamma 3 - \delta 3 = 20.705$
$\alpha 3 + \beta 3 - 180 = -76.476$
$\gamma 3 + \delta 3 - 180 = 20.705$
$\alpha 3 + \gamma 3 - 180 = 25.028$
$\beta 3 + \delta 3 - 180 = -80.799$
$\alpha 3 + \delta 3 - 180 = 4.323$
$\beta 3 + \gamma 3 - 180 = -60.094$
$\alpha 3 + \beta 3 - \gamma 3 - \delta 3 = -97.181$
$\alpha 3 + \gamma 3 - \beta 3 - \delta 3 = 105.830$
$\alpha 3 + \delta 3 - \beta 3 - \gamma 3 = 64.417$

Vertex 4
$\alpha 4 - \beta 4 = 108.430$
$\alpha 4 - \gamma 4 = 8.130$
$\alpha 4 - \delta 4 = 26.565$
$\beta 4 - \gamma 4 = -100.300$
$\beta 4 - \delta 4 = -81.870$
$\gamma 4 - \delta 4 = 18.435$
$\alpha 4 + \beta 4 - 180 = -55.305$
$\gamma 4 + \delta 4 - 180 = 18.435$
$\alpha 4 + \gamma 4 - 180 = 45.000$
$\beta 4 + \delta 4 - 180 = -81.870$
$\alpha 4 + \delta 4 - 180 = 26.565$
$\beta 4 + \gamma 4 - 180 = -63.435$
$\alpha 4 + \beta 4 - \gamma 4 - \delta 4 = -73.740$
$\alpha 4 + \gamma 4 - \beta 4 - \delta 4 = 126.870$
$\alpha 4 + \delta 4 - \beta 4 - \gamma 4 = 90.000$

Out[1854]=

================= NOT CONJUGATE-MODULAR =================

Mi < 1 for all i = 1…4 ⇒ NOT conjugate-modular. Boundary-strip switches preserve this.

Initial configuration (no switches applied):

$$\begin{pmatrix} \frac{180\,\text{ArcCos}\left[\frac{1}{\sqrt{5}}\right]}{\pi} & \frac{180\,\text{ArcCos}\left[\frac{7}{5\sqrt{2}}\right]}{\pi} & \frac{180\,\text{ArcCos}\left[-\frac{1}{\sqrt{10}}\right]}{\pi} & 90 \\ \frac{180\,\text{ArcCos}\left[\frac{1}{4\sqrt{11}}\right]}{\pi} & \frac{180\,\text{ArcCos}\left[\frac{7\sqrt{\frac{7}{22}}}{4}\right]}{\pi} & \frac{180\,\text{ArcCos}\left[-\frac{1}{2\sqrt{2}}\right]}{\pi} & 90 \\ \frac{180\,\text{ArcCos}\left[\frac{1}{4\sqrt{11}}\right]}{\pi} & \frac{180\,\text{ArcCos}\left[\frac{7\sqrt{\frac{7}{22}}}{4}\right]}{\pi} & \frac{180\,\text{ArcCos}\left[\frac{1}{2\sqrt{2}}\right]}{\pi} & 90 \\ \frac{180\,\text{ArcCos}\left[\frac{1}{\sqrt{5}}\right]}{\pi} & \frac{180\,\text{ArcCos}\left[\frac{7}{5\sqrt{2}}\right]}{\pi} & \frac{180\,\text{ArcCos}\left[\frac{1}{\sqrt{10}}\right]}{\pi} & 90 \end{pmatrix}$$

Mᵢ values:

M1 = $\frac{1}{2}$, M2 = $\frac{1}{2}$, M3 = $\frac{1}{2}$, M4 = $\frac{1}{2}$

Mi < 1 for all i = 1, ..., 4

Switch combination: Right

Switched anglesDeg:

$$\begin{pmatrix} \frac{180\,\text{ArcCos}\left[\frac{1}{\sqrt{5}}\right]}{\pi} & 180-\frac{180\,\text{ArcCos}\left[\frac{7}{5\sqrt{2}}\right]}{\pi} & 180-\frac{180\,\text{ArcCos}\left[-\frac{1}{\sqrt{10}}\right]}{\pi} & 90 \\ \frac{180\,\text{ArcCos}\left[\frac{1}{4\sqrt{11}}\right]}{\pi} & \frac{180\,\text{ArcCos}\left[\frac{7\sqrt{\frac{7}{22}}}{4}\right]}{\pi} & \frac{180\,\text{ArcCos}\left[-\frac{1}{2\sqrt{2}}\right]}{\pi} & 90 \\ \frac{180\,\text{ArcCos}\left[\frac{1}{4\sqrt{11}}\right]}{\pi} & \frac{180\,\text{ArcCos}\left[\frac{7\sqrt{\frac{7}{22}}}{4}\right]}{\pi} & \frac{180\,\text{ArcCos}\left[\frac{1}{2\sqrt{2}}\right]}{\pi} & 90 \\ \frac{180\,\text{ArcCos}\left[\frac{1}{\sqrt{5}}\right]}{\pi} & 180-\frac{180\,\text{ArcCos}\left[\frac{7}{5\sqrt{2}}\right]}{\pi} & 180-\frac{180\,\text{ArcCos}\left[\frac{1}{\sqrt{10}}\right]}{\pi} & 90 \end{pmatrix}$$

Mᵢ values:

M1 = $\frac{1}{2}$, M2 = $\frac{1}{2}$, M3 = $\frac{1}{2}$, M4 = $\frac{1}{2}$

Mi < 1 for all i = 1, ..., 4

Switch combination: Left

Switched anglesDeg:

$$\begin{pmatrix} \frac{180\,\text{ArcCos}\left[\frac{1}{\sqrt{5}}\right]}{\pi} & \frac{180\,\text{ArcCos}\left[\frac{7}{5\sqrt{2}}\right]}{\pi} & \frac{180\,\text{ArcCos}\left[-\frac{1}{\sqrt{10}}\right]}{\pi} & 90 \\ \frac{180\,\text{ArcCos}\left[\frac{1}{4\sqrt{11}}\right]}{\pi} & 180-\frac{180\,\text{ArcCos}\left[\frac{7\sqrt{\frac{7}{22}}}{4}\right]}{\pi} & 180-\frac{180\,\text{ArcCos}\left[-\frac{1}{2\sqrt{2}}\right]}{\pi} & 90 \\ \frac{180\,\text{ArcCos}\left[\frac{1}{4\sqrt{11}}\right]}{\pi} & 180-\frac{180\,\text{ArcCos}\left[\frac{7\sqrt{\frac{7}{22}}}{4}\right]}{\pi} & 180-\frac{180\,\text{ArcCos}\left[\frac{1}{2\sqrt{2}}\right]}{\pi} & 90 \\ \frac{180\,\text{ArcCos}\left[\frac{1}{\sqrt{5}}\right]}{\pi} & \frac{180\,\text{ArcCos}\left[\frac{7}{5\sqrt{2}}\right]}{\pi} & \frac{180\,\text{ArcCos}\left[\frac{1}{\sqrt{10}}\right]}{\pi} & 90 \end{pmatrix}$$

Mᵢ values:

M1 = $\frac{1}{2}$, M2 = $\frac{1}{2}$, M3 = $\frac{1}{2}$, M4 = $\frac{1}{2}$

Mi < 1 for all i = 1, ..., 4

Switch combination: Lower

Switched anglesDeg:

$$\begin{pmatrix} 180-\frac{180\,\text{ArcCos}\left[\frac{1}{\sqrt{5}}\right]}{\pi} & 180-\frac{180\,\text{ArcCos}\left[\frac{7}{5\sqrt{2}}\right]}{\pi} & \frac{180\,\text{ArcCos}\left[-\frac{1}{\sqrt{10}}\right]}{\pi} & 90 \\ 180-\frac{180\,\text{ArcCos}\left[\frac{1}{4\sqrt{11}}\right]}{\pi} & 180-\frac{180\,\text{ArcCos}\left[\frac{7\sqrt{\frac{7}{22}}}{4}\right]}{\pi} & \frac{180\,\text{ArcCos}\left[-\frac{1}{2\sqrt{2}}\right]}{\pi} & 90 \\ \frac{180\,\text{ArcCos}\left[\frac{1}{4\sqrt{11}}\right]}{\pi} & \frac{180\,\text{ArcCos}\left[\frac{7\sqrt{\frac{7}{22}}}{4}\right]}{\pi} & \frac{180\,\text{ArcCos}\left[\frac{1}{2\sqrt{2}}\right]}{\pi} & 90 \\ \frac{180\,\text{ArcCos}\left[\frac{1}{\sqrt{5}}\right]}{\pi} & \frac{180\,\text{ArcCos}\left[\frac{7}{5\sqrt{2}}\right]}{\pi} & \frac{180\,\text{ArcCos}\left[\frac{1}{\sqrt{10}}\right]}{\pi} & 90 \end{pmatrix}$$

Mᵢ values:

M1 = $\frac{1}{2}$, M2 = $\frac{1}{2}$, M3 = $\frac{1}{2}$, M4 = $\frac{1}{2}$

Mi < 1 for all i = 1, ..., 4

Switch combination: Upper

Switched anglesDeg:

$$\begin{pmatrix} \frac{180\,\text{ArcCos}\left[\frac{1}{\sqrt{5}}\right]}{\pi} & \frac{180\,\text{ArcCos}\left[\frac{7}{5\sqrt{2}}\right]}{\pi} & \frac{180\,\text{ArcCos}\left[-\frac{1}{\sqrt{10}}\right]}{\pi} & 90 \\ \frac{180\,\text{ArcCos}\left[\frac{1}{4\sqrt{11}}\right]}{\pi} & \frac{180\,\text{ArcCos}\left[\frac{7\sqrt{\frac{7}{22}}}{4}\right]}{\pi} & \frac{180\,\text{ArcCos}\left[-\frac{1}{2\sqrt{2}}\right]}{\pi} & 90 \\ 180-\frac{180\,\text{ArcCos}\left[\frac{1}{4\sqrt{11}}\right]}{\pi} & 180-\frac{180\,\text{ArcCos}\left[\frac{7\sqrt{\frac{7}{22}}}{4}\right]}{\pi} & \frac{180\,\text{ArcCos}\left[\frac{1}{2\sqrt{2}}\right]}{\pi} & 90 \\ 180-\frac{180\,\text{ArcCos}\left[\frac{1}{\sqrt{5}}\right]}{\pi} & 180-\frac{180\,\text{ArcCos}\left[\frac{7}{5\sqrt{2}}\right]}{\pi} & \frac{180\,\text{ArcCos}\left[\frac{1}{\sqrt{10}}\right]}{\pi} & 90 \end{pmatrix}$$

M_i values:

$M1 = \frac{1}{2}$, $M2 = \frac{1}{2}$, $M3 = \frac{1}{2}$, $M4 = \frac{1}{2}$

Mi < 1 for all i = 1, ..., 4

Switch combination: Right + Left

Switched anglesDeg:

$$\begin{pmatrix} \frac{180\,\text{ArcCos}\left[\frac{1}{\sqrt{5}}\right]}{\pi} & 180-\frac{180\,\text{ArcCos}\left[\frac{7}{5\sqrt{2}}\right]}{\pi} & 180-\frac{180\,\text{ArcCos}\left[-\frac{1}{\sqrt{10}}\right]}{\pi} & 90 \\ \frac{180\,\text{ArcCos}\left[\frac{1}{4\sqrt{11}}\right]}{\pi} & 180-\frac{180\,\text{ArcCos}\left[\frac{7\sqrt{\frac{7}{22}}}{4}\right]}{\pi} & 180-\frac{180\,\text{ArcCos}\left[-\frac{1}{2\sqrt{2}}\right]}{\pi} & 90 \\ \frac{180\,\text{ArcCos}\left[\frac{1}{4\sqrt{11}}\right]}{\pi} & 180-\frac{180\,\text{ArcCos}\left[\frac{7\sqrt{\frac{7}{22}}}{4}\right]}{\pi} & 180-\frac{180\,\text{ArcCos}\left[\frac{1}{2\sqrt{2}}\right]}{\pi} & 90 \\ \frac{180\,\text{ArcCos}\left[\frac{1}{\sqrt{5}}\right]}{\pi} & 180-\frac{180\,\text{ArcCos}\left[\frac{7}{5\sqrt{2}}\right]}{\pi} & 180-\frac{180\,\text{ArcCos}\left[\frac{1}{\sqrt{10}}\right]}{\pi} & 90 \end{pmatrix}$$

M_i values:

$M1 = \frac{1}{2}$, $M2 = \frac{1}{2}$, $M3 = \frac{1}{2}$, $M4 = \frac{1}{2}$

Mi < 1 for all i = 1, ..., 4

Switch combination: Right + Lower

Switched anglesDeg:

$$\begin{pmatrix} 180-\frac{180\,\text{ArcCos}\left[\frac{1}{\sqrt{5}}\right]}{\pi} & \frac{180\,\text{ArcCos}\left[\frac{7}{5\sqrt{2}}\right]}{\pi} & 180-\frac{180\,\text{ArcCos}\left[-\frac{1}{\sqrt{10}}\right]}{\pi} & 90 \\ 180-\frac{180\,\text{ArcCos}\left[\frac{1}{4\sqrt{11}}\right]}{\pi} & 180-\frac{180\,\text{ArcCos}\left[\frac{7\sqrt{\frac{7}{22}}}{4}\right]}{\pi} & \frac{180\,\text{ArcCos}\left[-\frac{1}{2\sqrt{2}}\right]}{\pi} & 90 \\ \frac{180\,\text{ArcCos}\left[\frac{1}{4\sqrt{11}}\right]}{\pi} & \frac{180\,\text{ArcCos}\left[\frac{7\sqrt{\frac{7}{22}}}{4}\right]}{\pi} & \frac{180\,\text{ArcCos}\left[\frac{1}{2\sqrt{2}}\right]}{\pi} & 90 \\ \frac{180\,\text{ArcCos}\left[\frac{1}{\sqrt{5}}\right]}{\pi} & 180-\frac{180\,\text{ArcCos}\left[\frac{7}{5\sqrt{2}}\right]}{\pi} & 180-\frac{180\,\text{ArcCos}\left[\frac{1}{\sqrt{10}}\right]}{\pi} & 90 \end{pmatrix}$$

M_i values:

$M1 = \frac{1}{2}$, $M2 = \frac{1}{2}$, $M3 = \frac{1}{2}$, $M4 = \frac{1}{2}$

Mi < 1 for all i = 1, ..., 4

Switch combination: Right + Upper

Switched anglesDeg:

$$\begin{pmatrix} \frac{180\,\text{ArcCos}\left[\frac{1}{\sqrt{5}}\right]}{\pi} & 180-\frac{180\,\text{ArcCos}\left[\frac{7}{5\sqrt{2}}\right]}{\pi} & 180-\frac{180\,\text{ArcCos}\left[-\frac{1}{\sqrt{10}}\right]}{\pi} & 90 \\ \frac{180\,\text{ArcCos}\left[\frac{1}{4\sqrt{11}}\right]}{\pi} & \frac{180\,\text{ArcCos}\left[\frac{7\sqrt{\frac{7}{22}}}{4}\right]}{\pi} & \frac{180\,\text{ArcCos}\left[-\frac{1}{2\sqrt{2}}\right]}{\pi} & 90 \\ 180-\frac{180\,\text{ArcCos}\left[\frac{1}{4\sqrt{11}}\right]}{\pi} & 180-\frac{180\,\text{ArcCos}\left[\frac{7\sqrt{\frac{7}{22}}}{4}\right]}{\pi} & \frac{180\,\text{ArcCos}\left[\frac{1}{2\sqrt{2}}\right]}{\pi} & 90 \\ 180-\frac{180\,\text{ArcCos}\left[\frac{1}{\sqrt{5}}\right]}{\pi} & \frac{180\,\text{ArcCos}\left[\frac{7}{5\sqrt{2}}\right]}{\pi} & 180-\frac{180\,\text{ArcCos}\left[\frac{1}{\sqrt{10}}\right]}{\pi} & 90 \end{pmatrix}$$

M_i values:

$M1 = \frac{1}{2}$, $M2 = \frac{1}{2}$, $M3 = \frac{1}{2}$, $M4 = \frac{1}{2}$

Mi < 1 for all i = 1, ..., 4

Switch combination: Left + Lower

Switched anglesDeg:

$$\begin{pmatrix} 180-\frac{180\,\text{ArcCos}\left[\frac{1}{\sqrt{5}}\right]}{\pi} & 180-\frac{180\,\text{ArcCos}\left[\frac{7}{5\sqrt{2}}\right]}{\pi} & \frac{180\,\text{ArcCos}\left[-\frac{1}{\sqrt{10}}\right]}{\pi} & 90 \\ 180-\frac{180\,\text{ArcCos}\left[\frac{1}{4\sqrt{11}}\right]}{\pi} & \frac{180\,\text{ArcCos}\left[\frac{7\sqrt{\frac{7}{22}}}{4}\right]}{\pi} & 180-\frac{180\,\text{ArcCos}\left[-\frac{1}{2\sqrt{2}}\right]}{\pi} & 90 \\ \frac{180\,\text{ArcCos}\left[\frac{1}{4\sqrt{11}}\right]}{\pi} & 180-\frac{180\,\text{ArcCos}\left[\frac{7\sqrt{\frac{7}{22}}}{4}\right]}{\pi} & 180-\frac{180\,\text{ArcCos}\left[\frac{1}{2\sqrt{2}}\right]}{\pi} & 90 \\ \frac{180\,\text{ArcCos}\left[\frac{1}{\sqrt{5}}\right]}{\pi} & \frac{180\,\text{ArcCos}\left[\frac{7}{5\sqrt{2}}\right]}{\pi} & \frac{180\,\text{ArcCos}\left[\frac{1}{\sqrt{10}}\right]}{\pi} & 90 \end{pmatrix}$$

M_i values:

$M1 = \frac{1}{2}$, $M2 = \frac{1}{2}$, $M3 = \frac{1}{2}$, $M4 = \frac{1}{2}$

Mi < 1 for all i = 1, ..., 4

Switch combination: Left + Upper

Switched anglesDeg:

$$\begin{pmatrix} \frac{180\,\text{ArcCos}\left[\frac{1}{\sqrt{5}}\right]}{\pi} & \frac{180\,\text{ArcCos}\left[\frac{7}{5\sqrt{2}}\right]}{\pi} & \frac{180\,\text{ArcCos}\left[-\frac{1}{\sqrt{10}}\right]}{\pi} & 90 \\ \frac{180\,\text{ArcCos}\left[\frac{1}{4\sqrt{11}}\right]}{\pi} & 180-\frac{180\,\text{ArcCos}\left[\frac{7\sqrt{\frac{7}{22}}}{4}\right]}{\pi} & 180-\frac{180\,\text{ArcCos}\left[-\frac{1}{2\sqrt{2}}\right]}{\pi} & 90 \\ 180-\frac{180\,\text{ArcCos}\left[\frac{1}{4\sqrt{11}}\right]}{\pi} & \frac{180\,\text{ArcCos}\left[\frac{7\sqrt{\frac{7}{22}}}{4}\right]}{\pi} & 180-\frac{180\,\text{ArcCos}\left[\frac{1}{2\sqrt{2}}\right]}{\pi} & 90 \\ 180-\frac{180\,\text{ArcCos}\left[\frac{1}{\sqrt{5}}\right]}{\pi} & 180-\frac{180\,\text{ArcCos}\left[\frac{7}{5\sqrt{2}}\right]}{\pi} & \frac{180\,\text{ArcCos}\left[\frac{1}{\sqrt{10}}\right]}{\pi} & 90 \end{pmatrix}$$

M_i values:

$M1 = \frac{1}{2}$, $M2 = \frac{1}{2}$, $M3 = \frac{1}{2}$, $M4 = \frac{1}{2}$

Mi < 1 for all i = 1, ..., 4

Switch combination: Lower + Upper

Switched anglesDeg:

$$\begin{pmatrix} 180-\frac{180\,\text{ArcCos}\left[\frac{1}{\sqrt{5}}\right]}{\pi} & 180-\frac{180\,\text{ArcCos}\left[\frac{7}{5\sqrt{2}}\right]}{\pi} & \frac{180\,\text{ArcCos}\left[-\frac{1}{\sqrt{10}}\right]}{\pi} & 90 \\ 180-\frac{180\,\text{ArcCos}\left[\frac{1}{4\sqrt{11}}\right]}{\pi} & 180-\frac{180\,\text{ArcCos}\left[\frac{7\sqrt{\frac{7}{22}}}{4}\right]}{\pi} & \frac{180\,\text{ArcCos}\left[-\frac{1}{2\sqrt{2}}\right]}{\pi} & 90 \\ 180-\frac{180\,\text{ArcCos}\left[\frac{1}{4\sqrt{11}}\right]}{\pi} & 180-\frac{180\,\text{ArcCos}\left[\frac{7\sqrt{\frac{7}{22}}}{4}\right]}{\pi} & \frac{180\,\text{ArcCos}\left[\frac{1}{2\sqrt{2}}\right]}{\pi} & 90 \\ 180-\frac{180\,\text{ArcCos}\left[\frac{1}{\sqrt{5}}\right]}{\pi} & 180-\frac{180\,\text{ArcCos}\left[\frac{7}{5\sqrt{2}}\right]}{\pi} & \frac{180\,\text{ArcCos}\left[\frac{1}{\sqrt{10}}\right]}{\pi} & 90 \end{pmatrix}$$

Mᵢ values:

$M1 = \frac{1}{2}$, $M2 = \frac{1}{2}$, $M3 = \frac{1}{2}$, $M4 = \frac{1}{2}$

Mi < 1 for all i = 1, ..., 4

Switch combination: Right + Left + Lower

Switched anglesDeg:

$$\begin{pmatrix} 180-\frac{180\,\text{ArcCos}\left[\frac{1}{\sqrt{5}}\right]}{\pi} & \frac{180\,\text{ArcCos}\left[\frac{7}{5\sqrt{2}}\right]}{\pi} & 180-\frac{180\,\text{ArcCos}\left[-\frac{1}{\sqrt{10}}\right]}{\pi} & 90 \\ 180-\frac{180\,\text{ArcCos}\left[\frac{1}{4\sqrt{11}}\right]}{\pi} & \frac{180\,\text{ArcCos}\left[\frac{7\sqrt{\frac{7}{22}}}{4}\right]}{\pi} & 180-\frac{180\,\text{ArcCos}\left[-\frac{1}{2\sqrt{2}}\right]}{\pi} & 90 \\ \frac{180\,\text{ArcCos}\left[\frac{1}{4\sqrt{11}}\right]}{\pi} & 180-\frac{180\,\text{ArcCos}\left[\frac{7\sqrt{\frac{7}{22}}}{4}\right]}{\pi} & 180-\frac{180\,\text{ArcCos}\left[\frac{1}{2\sqrt{2}}\right]}{\pi} & 90 \\ \frac{180\,\text{ArcCos}\left[\frac{1}{\sqrt{5}}\right]}{\pi} & 180-\frac{180\,\text{ArcCos}\left[\frac{7}{5\sqrt{2}}\right]}{\pi} & 180-\frac{180\,\text{ArcCos}\left[\frac{1}{\sqrt{10}}\right]}{\pi} & 90 \end{pmatrix}$$

Mᵢ values:

$M1 = \frac{1}{2}$, $M2 = \frac{1}{2}$, $M3 = \frac{1}{2}$, $M4 = \frac{1}{2}$

Mi < 1 for all i = 1, ..., 4

Switch combination: Right + Left + Upper

Switched anglesDeg:

$$\begin{pmatrix} \frac{180\,\text{ArcCos}\left[\frac{1}{\sqrt{5}}\right]}{\pi} & 180-\frac{180\,\text{ArcCos}\left[\frac{7}{5\sqrt{2}}\right]}{\pi} & 180-\frac{180\,\text{ArcCos}\left[-\frac{1}{\sqrt{10}}\right]}{\pi} & 90 \\ \frac{180\,\text{ArcCos}\left[\frac{1}{4\sqrt{11}}\right]}{\pi} & 180-\frac{180\,\text{ArcCos}\left[\frac{7\sqrt{\frac{7}{22}}}{4}\right]}{\pi} & 180-\frac{180\,\text{ArcCos}\left[-\frac{1}{2\sqrt{2}}\right]}{\pi} & 90 \\ 180-\frac{180\,\text{ArcCos}\left[\frac{1}{4\sqrt{11}}\right]}{\pi} & \frac{180\,\text{ArcCos}\left[\frac{7\sqrt{\frac{7}{22}}}{4}\right]}{\pi} & 180-\frac{180\,\text{ArcCos}\left[\frac{1}{2\sqrt{2}}\right]}{\pi} & 90 \\ 180-\frac{180\,\text{ArcCos}\left[\frac{1}{\sqrt{5}}\right]}{\pi} & \frac{180\,\text{ArcCos}\left[\frac{7}{5\sqrt{2}}\right]}{\pi} & 180-\frac{180\,\text{ArcCos}\left[\frac{1}{\sqrt{10}}\right]}{\pi} & 90 \end{pmatrix}$$

Mᵢ values:

$M1 = \frac{1}{2}$, $M2 = \frac{1}{2}$, $M3 = \frac{1}{2}$, $M4 = \frac{1}{2}$

Mi < 1 for all i = 1, ..., 4

Switch combination: Right + Lower + Upper

Switched anglesDeg:

$$\begin{pmatrix} 180-\frac{180\,\text{ArcCos}\left[\frac{1}{\sqrt{5}}\right]}{\pi} & \frac{180\,\text{ArcCos}\left[\frac{7}{5\sqrt{2}}\right]}{\pi} & 180-\frac{180\,\text{ArcCos}\left[-\frac{1}{\sqrt{10}}\right]}{\pi} & 90 \\ 180-\frac{180\,\text{ArcCos}\left[\frac{1}{4\sqrt{11}}\right]}{\pi} & 180-\frac{180\,\text{ArcCos}\left[\frac{7\sqrt{\frac{7}{22}}}{4}\right]}{\pi} & \frac{180\,\text{ArcCos}\left[-\frac{1}{2\sqrt{2}}\right]}{\pi} & 90 \\ 180-\frac{180\,\text{ArcCos}\left[\frac{1}{4\sqrt{11}}\right]}{\pi} & 180-\frac{180\,\text{ArcCos}\left[\frac{7\sqrt{\frac{7}{22}}}{4}\right]}{\pi} & \frac{180\,\text{ArcCos}\left[\frac{1}{2\sqrt{2}}\right]}{\pi} & 90 \\ 180-\frac{180\,\text{ArcCos}\left[\frac{1}{\sqrt{5}}\right]}{\pi} & \frac{180\,\text{ArcCos}\left[\frac{7}{5\sqrt{2}}\right]}{\pi} & 180-\frac{180\,\text{ArcCos}\left[\frac{1}{\sqrt{10}}\right]}{\pi} & 90 \end{pmatrix}$$

Mᵢ values:

$M1 = \frac{1}{2}$, $M2 = \frac{1}{2}$, $M3 = \frac{1}{2}$, $M4 = \frac{1}{2}$

Mi < 1 for all i = 1, ..., 4

Switch combination: Left + Lower + Upper

Switched anglesDeg:

$$\begin{pmatrix} 180-\frac{180\,\text{ArcCos}\left[\frac{1}{\sqrt{5}}\right]}{\pi} & 180-\frac{180\,\text{ArcCos}\left[\frac{7}{5\sqrt{2}}\right]}{\pi} & \frac{180\,\text{ArcCos}\left[-\frac{1}{\sqrt{10}}\right]}{\pi} & 90 \\ 180-\frac{180\,\text{ArcCos}\left[\frac{1}{4\sqrt{11}}\right]}{\pi} & \frac{180\,\text{ArcCos}\left[\frac{7\sqrt{\frac{7}{22}}}{4}\right]}{\pi} & 180-\frac{180\,\text{ArcCos}\left[-\frac{1}{2\sqrt{2}}\right]}{\pi} & 90 \\ 180-\frac{180\,\text{ArcCos}\left[\frac{1}{4\sqrt{11}}\right]}{\pi} & \frac{180\,\text{ArcCos}\left[\frac{7\sqrt{\frac{7}{22}}}{4}\right]}{\pi} & 180-\frac{180\,\text{ArcCos}\left[\frac{1}{2\sqrt{2}}\right]}{\pi} & 90 \\ 180-\frac{180\,\text{ArcCos}\left[\frac{1}{\sqrt{5}}\right]}{\pi} & 180-\frac{180\,\text{ArcCos}\left[\frac{7}{5\sqrt{2}}\right]}{\pi} & \frac{180\,\text{ArcCos}\left[\frac{1}{\sqrt{10}}\right]}{\pi} & 90 \end{pmatrix}$$

Mᵢ values:

$M1 = \frac{1}{2}$, $M2 = \frac{1}{2}$, $M3 = \frac{1}{2}$, $M4 = \frac{1}{2}$

Mi < 1 for all i = 1, ..., 4

Switch combination: Right + Left + Lower + Upper

Switched anglesDeg:

$$\begin{pmatrix} 180-\frac{180\,\text{ArcCos}\left[\frac{1}{\sqrt{5}}\right]}{\pi} & \frac{180\,\text{ArcCos}\left[\frac{7}{5\sqrt{2}}\right]}{\pi} & 180-\frac{180\,\text{ArcCos}\left[-\frac{1}{\sqrt{10}}\right]}{\pi} & 90 \\ 180-\frac{180\,\text{ArcCos}\left[\frac{1}{4\sqrt{11}}\right]}{\pi} & \frac{180\,\text{ArcCos}\left[\frac{7\sqrt{\frac{7}{22}}}{4}\right]}{\pi} & 180-\frac{180\,\text{ArcCos}\left[-\frac{1}{2\sqrt{2}}\right]}{\pi} & 90 \\ 180-\frac{180\,\text{ArcCos}\left[\frac{1}{4\sqrt{11}}\right]}{\pi} & \frac{180\,\text{ArcCos}\left[\frac{7\sqrt{\frac{7}{22}}}{4}\right]}{\pi} & 180-\frac{180\,\text{ArcCos}\left[\frac{1}{2\sqrt{2}}\right]}{\pi} & 90 \\ 180-\frac{180\,\text{ArcCos}\left[\frac{1}{\sqrt{5}}\right]}{\pi} & \frac{180\,\text{ArcCos}\left[\frac{7}{5\sqrt{2}}\right]}{\pi} & 180-\frac{180\,\text{ArcCos}\left[\frac{1}{\sqrt{10}}\right]}{\pi} & 90 \end{pmatrix}$$

Mᵢ values:

$M1 = \frac{1}{2}$, $M2 = \frac{1}{2}$, $M3 = \frac{1}{2}$, $M4 = \frac{1}{2}$

Mi < 1 for all i = 1, ..., 4

Out[1856]=

================= NOT CHIMERA =================

Fails conic, orthodiagonal & isogonal tests for all i=1, ..., 4 ⇒ NOT chimera. Boundary-strip switches preserve these failures as demonstrated in the NOT CONIC, NOT ORTHODIAGONAL, and NOT ISOGONAL sections.