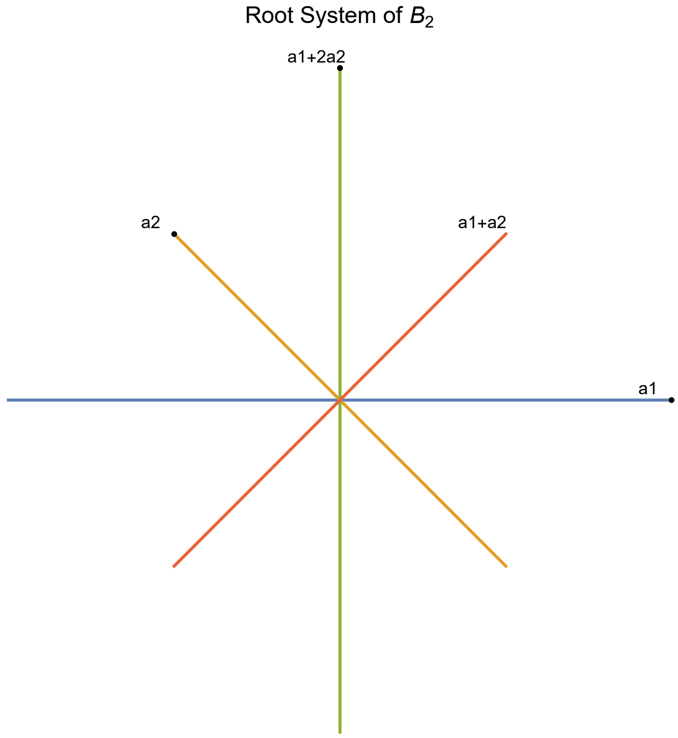
In[∘]:=
```
ClearAll["Global`*"]

(*
    Root System of B2

      Φ = {α1, α1+α2, α1 + 2α2, α2, -α1, -(α1+α2), -(α1 + 2α2), -α2}

*)
```

In[∘]:=
```
α1 = {√2, 0}; T = {{Cos[3 π / 4], -Sin[3 π / 4]}, {Sin[3 π / 4], Cos[3 π / 4]}};
α2 = (1 / √2) (T.α1);
a1 = α1; a2 = α2;
```

In[∘]:=
```
(* Plot the Root System of B2 *)
origin = {0, 0};
rootOrbit = {{-α1, α1}, {-α2, α2}, {-(α1 + 2 α2), α1 + 2 α2}, {-(α1 + α2), α1 + α2}};
temp = ListLinePlot[rootOrbit, AspectRatio → Automatic,
  Axes → False, PlotLabel → Style["Root System of B2", FontSize → 12],
  Epilog → {Point[a1 + 2 a2], Text["a1+2a2", a1 + 2 a2 + {-0.1, 0.05}],
    Point[a1 + 2 a2], Text["a1+a2", a1 + a2 + {-0.1, 0.05}], Point[a2],
    Text["a2", a2 + {-0.1, 0.05}], Point[a1], Text["a1", a1 + {-0.1, 0.05}]}]
```

Out[∘]=



In[ ]:= (*

Let W_{α_1}, W_{α_2} be the simple reflections,
then the Weyl group 'W' of B_2 could contain such elements:

$$W = \{e, W_{\alpha_1}, W_{\alpha_2}W_{\alpha_1}, W_{\alpha_1}W_{\alpha_2}W_{\alpha_1}, W_{\alpha_2}W_{\alpha_1}W_{\alpha_2}W_{\alpha_1}, W_{\alpha_2}W_{\alpha_1}W_{\alpha_2}, W_{\alpha_1}W_{\alpha_2}, W_{\alpha_2}\},$$

and theirs signs are

sign: + − + − + − + − ;

The half sum of positives root: $\delta = \frac{3}{2}\alpha_1 + 2\alpha_2$, and the Weyl orbit of δ is

$$\left\{ \frac{3}{2}\alpha_1 + 2\alpha_2 ,\ \frac{1}{2}\alpha_1 + 2\alpha_2 ,\ \frac{1}{2}\alpha_1 - \alpha_2 ,\ -\frac{3}{2}\alpha_1 - \alpha_2,\ -\frac{3}{2}\alpha_1 - 2\alpha_2 ,\ -\frac{1}{2}\alpha_1 - 2\alpha_2 ,\ -\frac{1}{2}\alpha_1 + \alpha_2 ,\ \frac{3}{2}\alpha_1 + \alpha_2\right\}$$

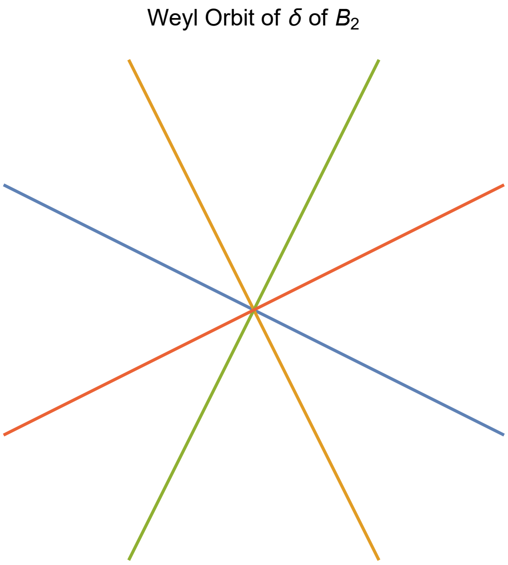
*)

$$\delta = \frac{3}{2}\alpha_1 + 2\alpha_2;$$

$$\text{deltaOrbitPlot} = \left\{\left\{-\frac{1}{2}\alpha_1 + \alpha_2, \frac{1}{2}\alpha_1 - \alpha_2\right\}, \left\{-\frac{1}{2}\alpha_1 - 2\alpha_2, \frac{1}{2}\alpha_1 + 2\alpha_2\right\}, \left\{-\frac{3}{2}\alpha_1 - 2\alpha_2, \frac{3}{2}\alpha_1 + 2\alpha_2\right\}, \left\{-\frac{3}{2}\alpha_1 - \alpha_2, \frac{3}{2}\alpha_1 + \alpha_2\right\}\right\};$$

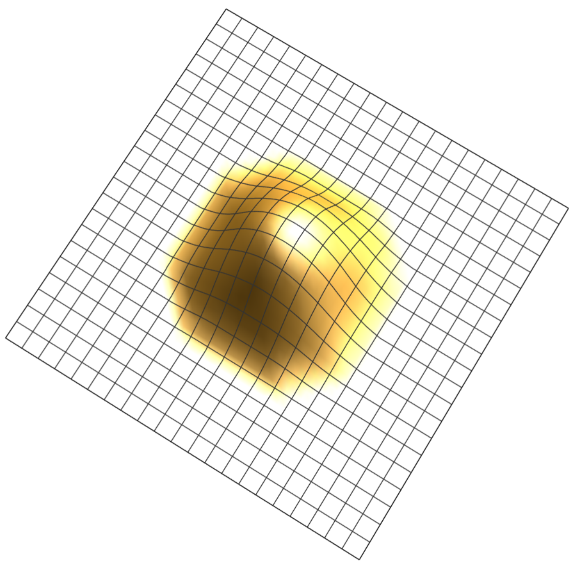
```
temp = ListLinePlot[deltaOrbitPlot, AspectRatio → Automatic, Axes → False,
  PlotLabel → Style["Weyl Orbit of δ of B2", FontSize → 12]]
```

Out[ ]=



```
In[ ]:= (* Orbital projection measure of δ *)
scale = 100; a1 = α1; a2 = α2;
region = ParametricRegion[{t * a1[[1]] + s * (a1 + a2) [[1]], t * a1[[2]] + s * (a1 + a2) [[2]]},
   {{t, 0, scale}, {s, 0, scale}}];
factor = 1 / Det[Transpose[{a1, a1 + a2}]];
f[x_, y_] := factor * Piecewise[{{1, {x, y} ∈ region}}, 0];
g[x_, y_] = Integrate[f[x - t * (a1 + 2 a2) [[1]], y - t * (a1 + 2 a2) [[2]]], {t, 0, scale}];
h[x_, y_] = Integrate[g[x - t * a2[[1]], y - t * a2[[2]]], {t, 0, scale}];

deltaOrbit = {3/2 a1 + 2 a2, 1/2 a1 + 2 a2, 1/2 a1 - a2,
   -3/2 a1 - a2, -3/2 a1 - 2 a2, -1/2 a1 - 2 a2, -1/2 a1 + a2, 3/2 a1 + a2};
μ[x_, y_] := Sum[(-1)^(i+1) * h[deltaOrbit[[i, 1]] - x, deltaOrbit[[i, 2]] - y], {i, 1, 8}];
range = 2.4;
data = Table[{x, y, If[μ[x, y] ≤ 0.01, 0, μ[x, y]]},
   {x, -range, range, 0.1}, {y, -range, range, 0.1}];
data1 = Flatten[data, 1];
(* temp=ListPointPlot3D[data1]; *)
ListPlot3D[data1, AspectRatio → Automatic,
 Axes → False, Boxed → False, Lighting → "Neutral", PlotRange → All,
 Mesh → {20}, PlotLabel → Style["μ_δ^p", FontSize → 12]]
```

$\mu_\delta{}^p$



$\mu_\delta{}^p$