

Pensieve header: Images for the BF2C talk.

```
SetDirectory["C:\\drorbn\\AcademicPensieve\\2014-02\\BF2C"]
```

```
C:\\drorbn\\AcademicPensieve\\2014-02\\BF2C
```

```
Kink0[s_, t_] := If[s ≤ 0, {t, 0, 0}, (* s is size, t is time *)
```

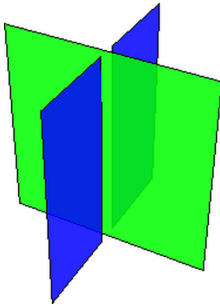
$$\left[\begin{array}{ll} \{t, 0, 0\} & t < -1.25 s \\ \{5 t + 5 s, 0, -4 t - 5 s\} & -1.25 s \leq t < -s \\ \frac{s}{\pi} \left\{ -\text{Sin}\left[\frac{\pi t}{s}\right], 1 + \text{Cos}\left[\frac{\pi t}{s}\right], \frac{\pi t}{s} \right\} & -s \leq t \leq s \\ \{5 t - 5 s, 0, -4 t + 5 s\} & s < t \leq 1.25 s \\ \{t, 0, 0\} & t > 1.25 s \end{array} \right];$$

```
Kink[s_, t_] := If[s ≤ 0, {t, -t2, 0}, (* s is size, t is time *)
```

$$\left[\begin{array}{ll} \{t, -t^2, 0\} & t < -1.25 s \\ \{5 t + 5 s, -(5 t + 5 s)^2, -4 t - 5 s\} & -1.25 s \leq t < -s \\ \frac{s}{\pi} \left\{ -\text{Sin}\left[\frac{\pi t}{s}\right], 1 + \text{Cos}\left[\frac{\pi t}{s}\right], \frac{\pi t}{s} \right\} & -s \leq t \leq s \\ \{5 t - 5 s, -(5 t - 5 s)^2, -4 t + 5 s\} & s < t \leq 1.25 s \\ \{t, -t^2, 0\} & t > 1.25 s \end{array} \right]$$

```
MakeImage["Ingredient1",
```

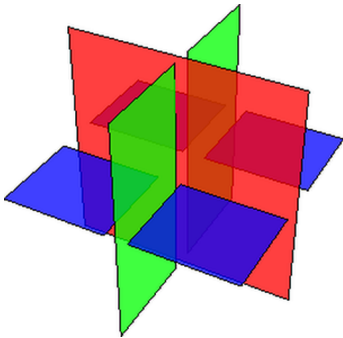
```
Graphics3D[{
  Opacity[0.85],
  Glow[Green], Polygon[{{-10, 0, -10}, {-10, 0, 10}, {10, 0, 10}, {10, 0, -10}}],
  Glow[Blue],
  Polygon[{{0, -10, -10}, {0, -10, 10}, {0, -1, 10}, {0, -1, -10}}],
  Polygon[{{0, 10, -10}, {0, 10, 10}, {0, 1, 10}, {0, 1, -10}}]
}, Lighting → None, Boxed → False],
ImageSize → 300]
```



```

MakeImage["Ingredient2",
Graphics3D[{
  Opacity[0.75],
  Glow[Hue[0]], Polygon[{{-10, 0, -10}, {-10, 0, 10}, {10, 0, 10}, {10, 0, -10}}],
  Glow[Hue[1 / 3]],
  Polygon[{{0, -10, -10}, {0, -10, 10}, {0, -1, 10}, {0, -1, -10}}],
  Polygon[{{0, 10, -10}, {0, 10, 10}, {0, 1, 10}, {0, 1, -10}}],
  Glow[Hue[2 / 3]],
  Polygon[{{1, 10, 0}, {1, 2, 0}, {10, 2, 0}, {10, 10, 0}}],
  Polygon[{{-1, 10, 0}, {-1, 2, 0}, {-10, 2, 0}, {-10, 10, 0}}],
  Polygon[{{-1, -10, 0}, {-1, -2, 0}, {-10, -2, 0}, {-10, -10, 0}}],
  Polygon[{{1, -10, 0}, {1, -2, 0}, {10, -2, 0}, {10, -10, 0}}]
}, Lighting -> None, Boxed -> False],
ImageSize -> 300]

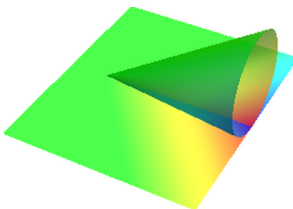
```



```

MakeImage["Ingredient3",
ParametricPlot3D[{s, Kink0[s, t][[1]], Kink0[s, t][[2]]},
{s, -0.25, 1}, {t, -1.75, 1.75},
ColorFunction -> Function[{x, y, z, s, t}, Hue[ $\frac{1 + \text{Kink0}[s, t][[3]]}{3}$ ]],
ColorFunctionScaling -> False,
PlotRange -> {{-0.25, 1}, {-0.75, 0.75}, {0, 0.75}}, Mesh -> False,
Boxed -> False, Axes -> False, PlotStyle -> {Opacity[0.7]}, PlotPoints -> 150
],
ImageSize -> 300
]

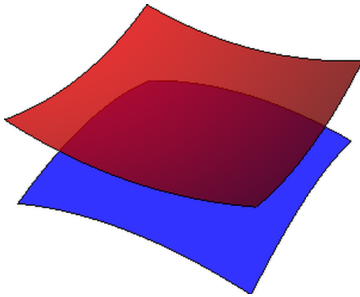
```



```

MakeImage["Roseman1a",
  α = 0.8;
  Plot3D[{{1 - α (1 -  $\frac{x^2 + y^2}{8}$ ), -1 + α (1 -  $\frac{x^2 + y^2}{8}$ )}, {x, -2, 2}, {y, -2, 2},
    BoxRatios → {1, 1, 0.4}, Boxed → False, PlotRange → {{-2, 2}, {-2, 2}, {-1, 1}},
    PlotStyle → {{Opacity[0.8], Red}, {Opacity[0.8], Blue}},
    Mesh → False, PlotPoints → 50, Boxed → False, Axes → False
  ],
  ImageSize → 300
]

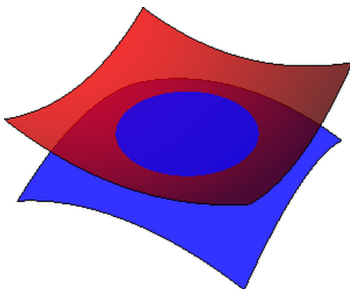
```



```

MakeImage["Roseman1b",
  α = 1.2;
  Plot3D[{{1 - α (1 -  $\frac{x^2 + y^2}{8}$ ), -1 + α (1 -  $\frac{x^2 + y^2}{8}$ )}, {x, -2, 2}, {y, -2, 2},
    BoxRatios → {1, 1, 0.4}, Boxed → False, PlotRange → {{-2, 2}, {-2, 2}, {-1, 1}},
    PlotStyle → {{Opacity[0.8], Red}, {Opacity[0.8], Blue}},
    Mesh → False, PlotPoints → 50, Boxed → False, Axes → False
  ],
  ImageSize → 300
]

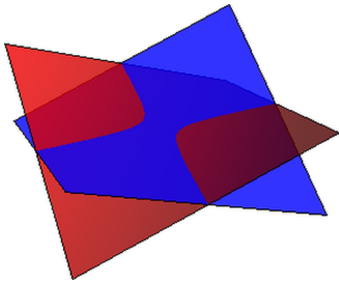
```



```

MakeImage["Roseman2a",
Plot3D[{xy, -0.1 - xy}, {x, -2, 2}, {y, -2, 2},
  BoxRatios → {1, 1, 0.4`}, Boxed → False, ImageSize → {315.1729630273366`, 260.`},
  Method → {"RotationControl" → "Globe"}, PlotRange → {{-2, 2}, {-2, 2}, All},
  PlotRangePadding → {Scaled[0.02`], Scaled[0.02`], Scaled[0.02`]},
  ViewPoint → {-2.580627656842925`, -0.9026639334946656`, -1.9938803173473902`},
  ViewVertical → {0.`, 0.`, -1.}`,
  PlotStyle → {{Opacity[0.8], Red}, {Opacity[0.8], Blue}},
  Mesh → False, PlotPoints → 50, Boxed → False, Axes → False
],
ImageSize → 300
]

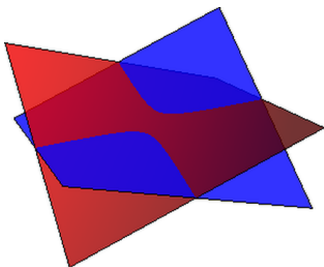
```



```

MakeImage["Roseman2b",
Plot3D[{xy, 0.1 - xy}, {x, -2, 2}, {y, -2, 2},
  BoxRatios → {1, 1, 0.4`}, Boxed → False, ImageSize → {315.1729630273366`, 260.`},
  Method → {"RotationControl" → "Globe"}, PlotRange → {{-2, 2}, {-2, 2}, All},
  PlotRangePadding → {Scaled[0.02`], Scaled[0.02`], Scaled[0.02`]},
  ViewPoint → {-2.580627656842925`, -0.9026639334946656`, -1.9938803173473902`},
  ViewVertical → {0.`, 0.`, -1.}`,
  PlotStyle → {{Opacity[0.8], Red}, {Opacity[0.8], Blue}},
  Mesh → False, PlotPoints → 50, Boxed → False, Axes → False
],
ImageSize → 300
]

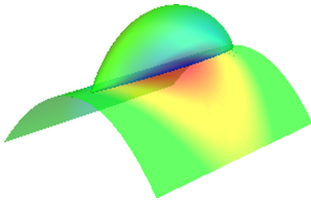
```



```

σ[s_, t_] := {s}~Join~Kink[0.75 - s2, t];
MakeImage["Roseman3a",
  ParametricPlot3D[σ[s, t][[1 ;; 3]],
    {s, -1, 1}, {t, -1.75, 1.75},
    ColorFunction → Function[{x, y, z, s, t}, Hue[ $\frac{2/3 + \sigma[s, t][[4]]}{2}$ ]],
    ColorFunctionScaling → False,
    PlotRange → {{-1, 1}, {-0.75, 0.75}, {-0.5, 0.75}}, Mesh → False,
    Boxed → False, Axes → False, PlotStyle → {Opacity[0.6]},
    PlotPoints → 200, ViewPoint → {-2.60408, -1.97812, 0.869364},
    ViewVertical → {-0.332387, -0.276651, 1.47206}
  ],
  ImageSize → 300
]

```



```

σ[s_, t_] := {s}~Join~Kink[0, t];
MakeImage["Roseman3b",
  ParametricPlot3D[σ[s, t][[1 ;; 3]],
    {s, -1, 1}, {t, -1.75, 1.75},
    ColorFunction → Function[{x, y, z, s, t}, Hue[ $\frac{2/3 + \sigma[s, t][[4]]}{2}$ ]],
    ColorFunctionScaling → False,
    PlotRange → {{-1, 1}, {-0.75, 0.75}, {-0.5, 0.75}}, Mesh → False,
    Boxed → False, Axes → False, PlotStyle → {Opacity[0.6]},
    PlotPoints → 200, ViewPoint → {-2.60408, -1.97812, 0.869364},
    ViewVertical → {-0.332387, -0.276651, 1.47206}
  ],
  ImageSize → 300
]

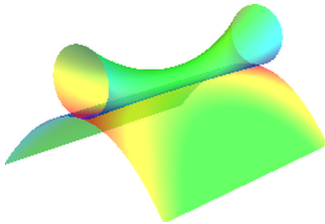
```



```

σ[s_, t_] := {s}~Join~Kink[0.25 +  $\frac{s^2}{2}$ , t];
MakeImage["Roseman4a",
  ParametricPlot3D[σ[s, t][[1 ;; 3]],
    {s, -1, 1}, {t, -1.75, 1.75},
    ColorFunction → Function[{x, y, z, s, t}, Hue[ $\frac{2/3 + σ[s, t][[4]]}{2}$ ]],
    ColorFunctionScaling → False,
    PlotRange → {{-1, 1}, {-0.75, 0.75}, {-0.5, 0.75}}, Mesh → False,
    Boxed → False, Axes → False, PlotStyle → {Opacity[0.6]},
    PlotPoints → 250, ViewPoint → {-2.60408, -1.97812, 0.869364},
    ViewVertical → {-0.332387, -0.276651, 1.47206}
  ],
  ImageSize → 300
]

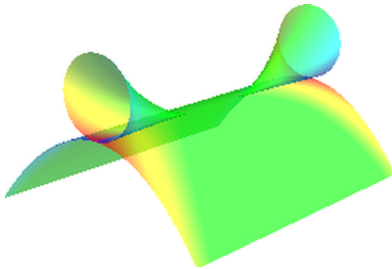
```



```

σ[s_, t_] := {s}~Join~Kink[0.8 s^2 - 0.05, t];
MakeImage["Roseman4b",
  ParametricPlot3D[σ[s, t][[1 ;; 3]],
    {s, -1, 1}, {t, -1.75, 1.75},
    ColorFunction → Function[{x, y, z, s, t}, Hue[ $\frac{2/3 + \sigma[s, t][[4]]}{2}$ ]],
    ColorFunctionScaling → False,
    PlotRange → {{-1, 1}, {-0.75, 0.75}, {-0.5, 0.75}}, Mesh → False,
    Boxed → False, Axes → False, PlotStyle → {Opacity[0.6]},
    PlotPoints → 250, ViewPoint → {-2.60408, -1.97812, 0.869364},
    ViewVertical → {-0.332387, -0.276651, 1.47206}
  ],
  ImageSize → 300
]

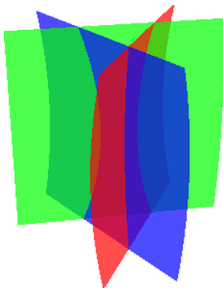
```



```

MakeImage["Roseman5a",
Show[
ParametricPlot3D[
Append[0.2 (1 - 0.5 (1 - z^2)) {1, 0} + t {0, 1}, z], {t, -1, 1}, {z, -1, 1},
Mesh -> False, Boxed -> False, Axes -> False,
PlotStyle -> {Glow[Hue[0]], Opacity[0.7]}, Lighting -> None],
ParametricPlot3D[Append[0.2 (1 - 0.5 (1 - z^2)) {-1/2, sqrt(3)/2} + t {sqrt(3)/2, 1/2}, z],
{t, -1, 1}, {z, -1, 1},
Mesh -> False, Boxed -> False, Axes -> False,
PlotStyle -> {Glow[Hue[1/3]], Opacity[0.7]}, Lighting -> None],
ParametricPlot3D[Append[0.2 (1 - 0.5 (1 - z^2)) {-1/2, -sqrt(3)/2} + t {-sqrt(3)/2, 1/2}, z],
{t, -1, 1}, {z, -1, 1},
Mesh -> False, Boxed -> False, Axes -> False,
PlotStyle -> {Glow[Hue[2/3]], Opacity[0.7]}, Lighting -> None],
PlotRange -> All, ViewPoint -> {1.07475, -2.85045, 1.47304},
ViewVertical -> {0.0785897, -0.166645, 0.983457}
],
ImageSize -> 300
]

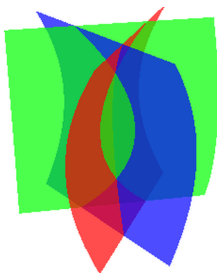
```




```

MakeImage["Roseman5b",
Show[
ParametricPlot3D[
Append[0.2 (1 - 1.5 (1 - z^2)) {1, 0} + t {0, 1}, z], {t, -1, 1}, {z, -1, 1},
Mesh -> False, Boxed -> False, Axes -> False,
PlotStyle -> {Glow[Hue[0]], Opacity[0.7]}, Lighting -> None],
ParametricPlot3D[Append[0.2 (1 - 1.5 (1 - z^2)) {-1/2, sqrt(3)/2} + t {sqrt(3)/2, 1/2}, z],
{t, -1, 1}, {z, -1, 1},
Mesh -> False, Boxed -> False, Axes -> False,
PlotStyle -> {Glow[Hue[1/3]], Opacity[0.7]}, Lighting -> None],
ParametricPlot3D[Append[0.2 (1 - 1.5 (1 - z^2)) {-1/2, -sqrt(3)/2} + t {-sqrt(3)/2, 1/2}, z],
{t, -1, 1}, {z, -1, 1},
Mesh -> False, Boxed -> False, Axes -> False,
PlotStyle -> {Glow[Hue[2/3]], Opacity[0.7]}, Lighting -> None],
PlotRange -> All, ViewPoint -> {1.07475, -2.85045, 1.47304},
ViewVertical -> {0.0785897, -0.166645, 0.983457}
],
ImageSize -> 300
]

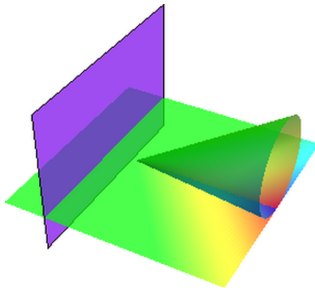
```



```

MakeImage["Roseman6a",
  Show[
    ParametricPlot3D[{s, Kink0[s, t][[1]], Kink0[s, t][[2]]},
      {s, -0.5, 1}, {t, -1.75, 1.75},
      ColorFunction -> Function[{x, y, z, s, t}, Hue[ $\frac{1 + \text{Kink0}[s, t][[3]]}{3}$ ]],
      ColorFunctionScaling -> False,
      PlotRange -> {{-0.5, 1}, {-0.75, 0.75}, {-0.25, 0.75}}, Mesh -> False,
      Boxed -> False, Axes -> False, PlotStyle -> {Opacity[0.7]}, PlotPoints -> 150
    ],
    Graphics3D[{Opacity[0.7], Hue[0.75],
      Polygon[{{-0.2, -0.75, -0.25},
        {-0.2, -0.75, 0.75}, {-0.2, 0.75, 0.75}, {-0.2, 0.75, -0.25}}]
    }],
  ],
  ImageSize -> 300
]

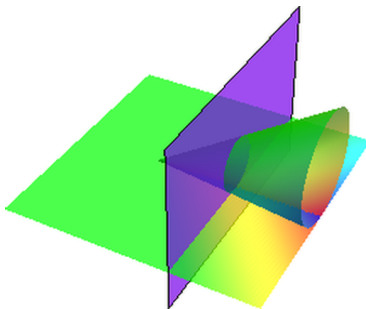
```



```

MakeImage["Roseman6b",
Show[
ParametricPlot3D[{s, Kink0[s, t][[1]], Kink0[s, t][[2]]},
{s, -0.5, 1}, {t, -1.75, 1.75},
ColorFunction -> Function[{x, y, z, s, t}, Hue[ $\frac{1 + \text{Kink0}[s, t][[3]]}{3}$ ]],
ColorFunctionScaling -> False,
PlotRange -> {{-0.5, 1}, {-0.75, 0.75}, {-0.25, 0.75}}, Mesh -> False,
Boxed -> False, Axes -> False, PlotStyle -> {Opacity[0.7]}, PlotPoints -> 150
],
Graphics3D[{Opacity[0.7], Hue[0.75],
Polygon[{{0.5, -0.75, -0.25},
{0.5, -0.75, 0.75}, {0.5, 0.75, 0.75}, {0.5, 0.75, -0.25}}]
}],
],
ImageSize -> 300
]

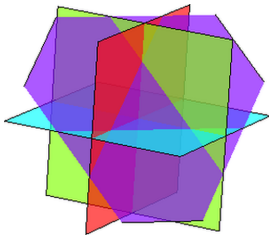
```



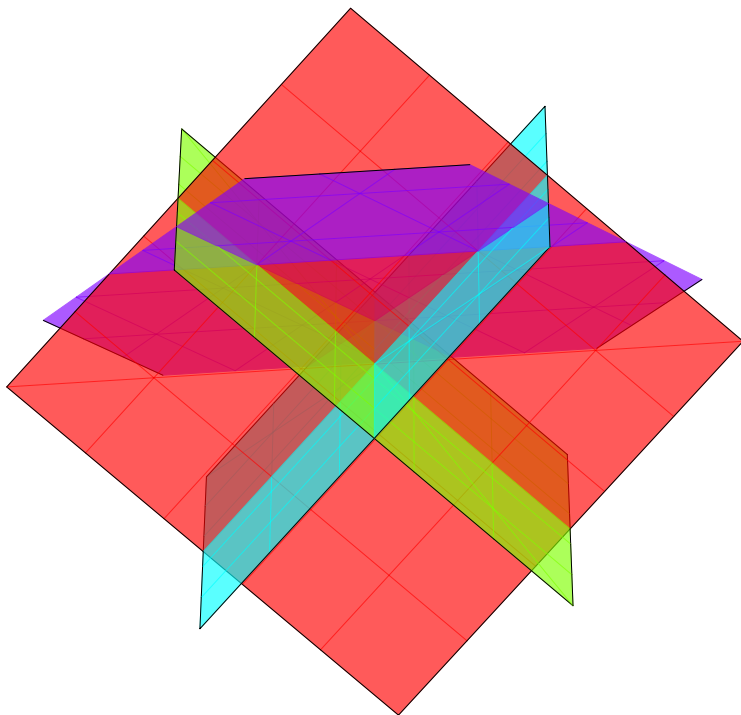
```

MakeImage["Roseman7a",
Graphics3D[{
  Opacity[0.65],
  Glow[Hue[0 / 4]],
  Polygon[{{-10, 0, -10}, {-10, 0, 10}, {10, 0, 10}, {10, 0, -10}}],
  Glow[Hue[1 / 4]],
  Polygon[{{0, -10, -10}, {0, -10, 10}, {0, 10, 10}, {0, 10, -10}}],
  Glow[Hue[2 / 4]],
  Polygon[{{-10, 10, 0}, {-10, -10, 0}, {10, -10, 0}, {10, 10, 0}}],
  Glow[Hue[3 / 4]],
  Polygon[10 {{2, -1, -1}, {-1, 2, -1}, {-1, -1, 2}} + 2 {1, 1, 1}]
},
Boxed -> False, ImageSize -> {390., Automatic}, Lighting -> None, PlotRange -> 10,
ViewPoint -> {24.7, 12.5, 7.45}, ViewVertical -> {-0.072, -0.109, 0.991}
],
ImageSize -> 300]

```



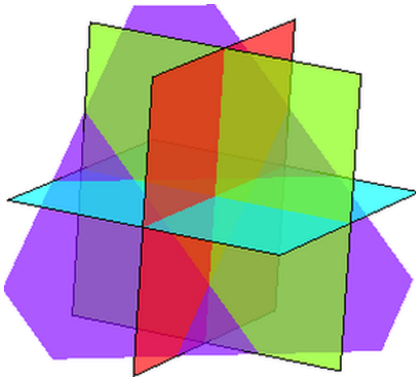
`$Image["Roseman7a"]`



```

MakeImage["Roseman7b",
Graphics3D[{
  Opacity[0.65],
  Glow[Hue[0/4]],
  Polygon[{{-10, 0, -10}, {-10, 0, 10}, {10, 0, 10}, {10, 0, -10}}],
  Glow[Hue[1/4]],
  Polygon[{{0, -10, -10}, {0, -10, 10}, {0, 10, 10}, {0, 10, -10}}],
  Glow[Hue[2/4]],
  Polygon[{{-10, 10, 0}, {-10, -10, 0}, {10, -10, 0}, {10, 10, 0}}],
  Glow[Hue[3/4]],
  Polygon[10 {{2, -1, -1}, {-1, 2, -1}, {-1, -1, 2}} - 2 {1, 1, 1}]
},
Boxed -> False, ImageSize -> {390., Automatic}, Lighting -> None, PlotRange -> 10,
ViewPoint -> {24.7, 12.5, 7.45}, ViewVertical -> {-0.072, -0.109, 0.991}
],
ImageSize -> 300]

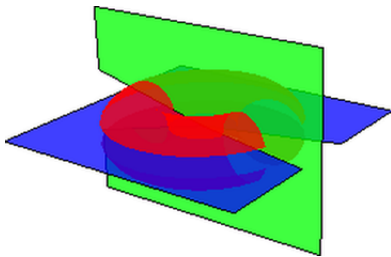
```



```

MakeImage["VeeAtom",
  Show[ParametricPlot3D[
    {(2 + Cos[β]) Cos[α], (2 + Cos[β]) Sin[α], Sin[β]},
    {α,  $\frac{\pi}{10}$ , 2π -  $\frac{\pi}{10}$ }, {β,  $\frac{\pi}{10}$ , 2π -  $\frac{\pi}{10}$ },
    Mesh → False, PlotStyle → {Glow[Red], Opacity[0.75]}
  ],
  Graphics3D[{
    Opacity[0.75],
    Glow[Blue],
    Polygon[{{-4, -4, 0}, {-4, 4, 0},
      {4, 4, 0}, {4, 1, 0}, {0, 0, 0}, {4, -1, 0}, {4, -4, 0}}],
    Glow[Green],
    Polygon[{{-4, 0, -3}, {-4, 0, -1},
      {0, 0, 0}, {-4, 0, 1}, {-4, 0, 3}, {4, 0, 3}, {4, 0, -3}}]
  ]],
  Boxed → False, Axes → False, PlotRange → All, Lighting → None,
  ViewPoint → {1.94, -2.46, 1.25}, ViewVertical → {0.17, -0.17, 1.29}
],
  ImageSize → 300]

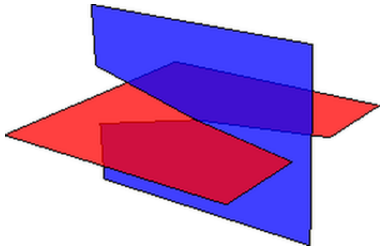
```



```

MakeImage["DoublePoint",
Graphics3D[{
  Opacity[0.75],
  Glow[Red],
  Polygon[
    {{-4, -4, 0}, {-4, 4, 0}, {4, 4, 0}, {4, 1, 0}, {0, 0, 0}, {4, -1, 0}, {4, -4, 0}},
  Glow[Blue],
  Polygon[
    {{-4, 0, -3}, {-4, 0, -1}, {0, 0, 0}, {-4, 0, 1}, {-4, 0, 3}, {4, 0, 3}, {4, 0, -3}}]
},
Boxed → False, Axes → False, PlotRange → All, Lighting → None,
ViewPoint → {1.94, -2.46, 1.25}, ViewVertical → {0.17, -0.17, 1.29}
],
ImageSize → 300]

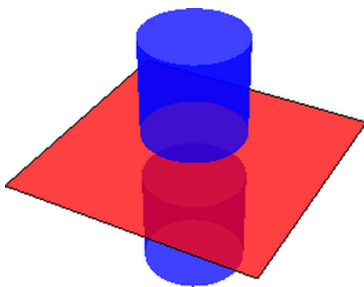
```



```

MakeImage["Xp",
Graphics3D[{
  Opacity[0.75],
  Glow[Red], Polygon[{{-10, -10, 0}, {-10, 10, 0}, {10, 10, 0}, {10, -10, 0}}],
  Glow[Blue], CapForm[None],
  Tube[{{0, 0, 2}, {0, 0, 10}}, 4],
  Tube[{{0, 0, -2}, {0, 0, -10}}, 4]
}, Lighting → None, Boxed → False],
ImageSize → 300]

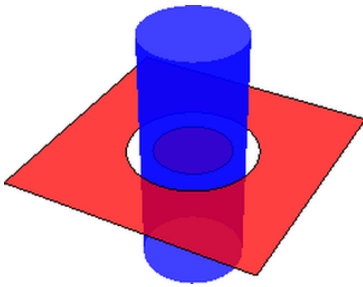
```




```

MakeImage["Xm",
  Show[{
    Graphics3D[{
      Opacity[0.75], Glow[Blue], CapForm[None],
      Tube[{{0, 0, -10}, {0, 0, 10}}, 4]
    }],
    Plot3D[0, {x, -10, 10}, {y, -10, 10},
      RegionFunction -> Function[{x, y}, x^2 + y^2 <= 3^2 || x^2 + y^2 >= 5^2],
      Mesh -> None, Axes -> None, PlotStyle -> {Opacity[0.75], Glow[Red]}]
  ]
  ], Lighting -> None, Boxed -> False],
  ImageSize -> 300]

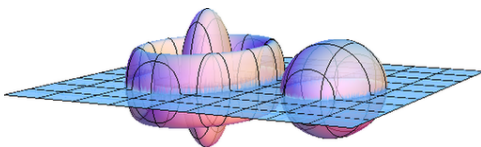
```



```

MakeImage["BubbleWrap",
  h[x_, y_] := (r = Sqrt[x^2 + y^2];
  Which[
    r <= 1, Sqrt[1 - r^2],
    2 <= r <= 3, Sqrt[(r - 2) (3 - r)],
    (x - 6)^2 + y^2 <= 4, 1/3 Sqrt[4 - (x - 6)^2 - y^2],
    True, 0
  ]
  );
  Plot3D[{h[x, y], -h[x, y]}, {x, -5, 10}, {y, -5, 5},
    PlotRange -> All, Boxed -> False, Axes -> None,
    PlotPoints -> 250, PlotStyle -> {Opacity[0.75]}, Mesh -> 8,
    ViewPoint -> {1.54027, -2.96757, 0.520682}, ViewVertical -> {0., 0., 1.}
  ],
  ImageSize -> 600
]

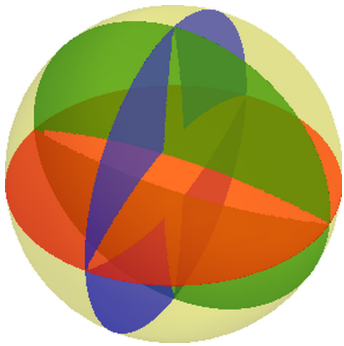
```



```

MakeImage["ShieldedTriplePoint",
Show[
Graphics3D[{
Opacity[0.25], Yellow, Sphere[{0, 0, 0}, 1]
}, Boxed → False],
ParametricPlot3D[
{r Cos[θ], r Sin[θ], 0},
{r, 0, 1}, {θ, 0, 2 π},
Mesh → False, PlotStyle → {Opacity[0.75], Red}, PlotPoints → 150
],
ParametricPlot3D[
{r Cos[θ], 0, r Sin[θ]},
{r, 0, 1}, {θ, 0, 2 π},
Mesh → False, PlotStyle → {Opacity[0.75], Green}, PlotPoints → 150,
RegionFunction → Function[{x, y, z, r, θ}, 8 Abs[z] ≥ 1 - x2]
],
ParametricPlot3D[
{0, r Cos[θ], r Sin[θ]},
{r, 0, 1}, {θ, 0, 2 π},
Mesh → False, PlotStyle → {Opacity[0.75], Blue}, PlotPoints → 150,
RegionFunction → Function[{x, y, z, r, θ}, 4 Abs[z] ≥ 1 - y2 && 8 Abs[y] ≥ 1 - z2]
],
Lighting → "Neutral"
],
ImageSize → 450, ViewPoint → {1.06422, -2.02233, 2.49552},
ViewVertical → {-0.140349, 0.145661, 0.979329}]

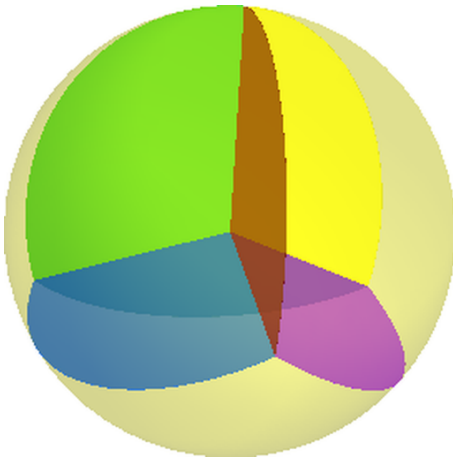
```



```

MakeImage["ShieldedVertex",
  {v0, v1, v2, v3} = {{1, 1, 1}, {1, -1, -1}, {-1, 1, -1}, {-1, -1, 1}} // N;
   $\alpha = \text{ArcCos}\left[\frac{v0.v1}{\sqrt{(v0.v0)(v1.v1)}}\right];$ 
  CircularSector[v0_, v1_] := Polygon[{{0, 0, 0}~Join~#] & /@ Partition[
    Table[RotationMatrix[ $\theta$ , {v0, v1}].v0, { $\theta$ , 0,  $\alpha$ ,  $\alpha/72$ }],
    2, 1
  ];
  Graphics3D[{{
    Opacity[0.25], Yellow, Sphere[{0, 0, 0},  $\sqrt{3}$ ],
    Opacity[0.75], Hue[0], EdgeForm[], CircularSector[v0, v1],
    Opacity[0.75], Hue[0.15], EdgeForm[], CircularSector[v0, v2],
    Opacity[0.75], Hue[0.3], EdgeForm[], CircularSector[v0, v3],
    Opacity[0.75], Hue[0.45], EdgeForm[], CircularSector[v2, v3],
    Opacity[0.75], Hue[0.6], EdgeForm[], CircularSector[v1, v3],
    Opacity[0.75], Hue[0.75], EdgeForm[], CircularSector[v1, v2]
  }],
  Lighting -> "Neutral", Boxed -> False,
  ViewPoint -> {2.97591, -1.53334, -0.492778},
  ViewVertical -> {0.865466, 0.232794, 0.443593}
],
  ImageSize -> 450
]

```



```
MakeImage["ColourWheel",  
s = "rggbrb";  
ImageCrop[PieChart3D[  
  Table[1, {StringLength[s]}],  
  ChartStyle -> (Characters[s] /. {"r" -> Red, "g" -> Green, "b" -> Blue}),  
  SectorOrigin -> {{RandomReal[{0, 2  $\pi$ ]}, "Counterclockwise"}, 1},  
  ChartBaseStyle -> EdgeForm[{Thickness[0.03], Black}],  
  ChartElementFunction -> "ProfileSector3D",  
  ImagePadding -> 0, ImageMargins -> 0, PlotRangePadding -> 0  
]],  
ImageSize -> 300]
```

