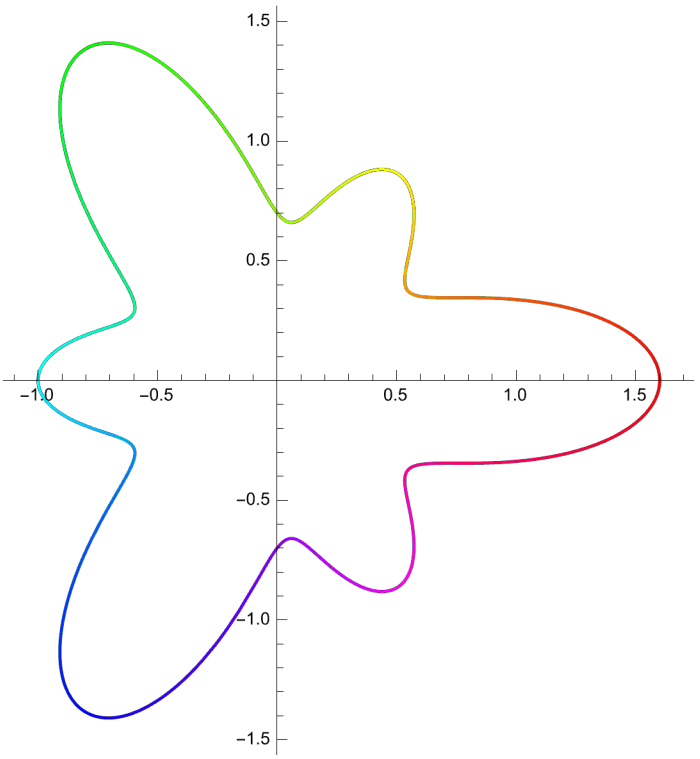
Trefoil Art

In[ ]:=
```
ParametricPlot[{Cos[t], Sin[t]} (1 + 0.3 Cos[3 t] + 0.3 Cos[6 t]), {t, 0, 2 π},
 PlotStyle → {Orange, Specularity[White, 40]}, ColorFunction → ({x, y, u} ↦ Hue[u])]
```
绘制参数图 余弦 正弦 余弦 余弦 绘图样式 橙色 反射度 白色 颜色函数 色相

Out[ ]=

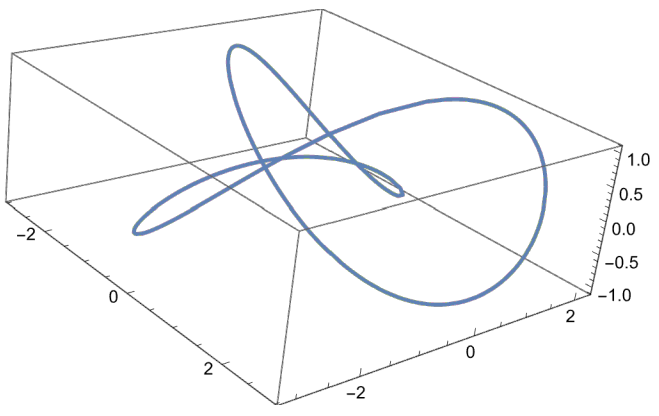


In[ ]:=
```
KnotData[{3, 1}, "SpaceCurve"][t]
```
纽结数据

Out[ ]=
```
{Sin[t] + 2 Sin[2 t], Cos[t] − 2 Cos[2 t], −Sin[3 t]}
```

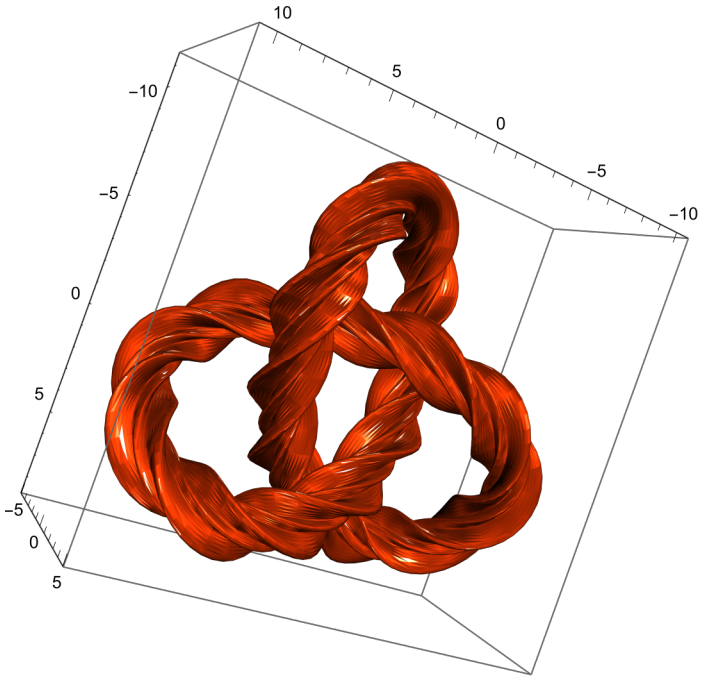
In[ ]:=
```
ParametricPlot3D[{Sin[t] + 2 Sin[2 t], Cos[t] − 2 Cos[2 t], −Sin[3 t]}, {t, 0, 2 π}]
```
绘制三维参数图 正弦 正弦 余弦 余弦 正弦

Out[ ]=



In[ ]:=
```
c = KnotData[{3, 1}, "SpaceCurve"];
    |纽结数据
n = Simplify@FrenetSerretSystem[c[u], u][[-1, 2 ;;]];
    |化简        |弗莱纳系统
ParametricPlot3D[{3 c[u] + RotationMatrix[7 u].{Cos[v], Sin[v]}.n
|绘制三维参数图                  |旋转矩阵                    |余弦     |正弦
    (1 + .3 Cos[3 v] + 0.3 Cos[6 v])}, {u, 0, 2 Pi}, {v, 0, 2 Pi}, PlotPoints → 50,
          |余弦          |余弦                |圆周率          |…    |绘图点
 ColorFunction → (Hue[#5] &), PlotStyle → {MaterialShading["Glazed"]},
|颜色函数              |色相          |绘图样式          |材质效果图
 Lighting → "ThreePoint", Mesh → None, ViewPoint → {1, 0, 2}]
|光照                          |网格    |无    |视点
```

Out[ ]=



In[ ]:=
```
RotationMatrix[t]
|旋转矩阵
```

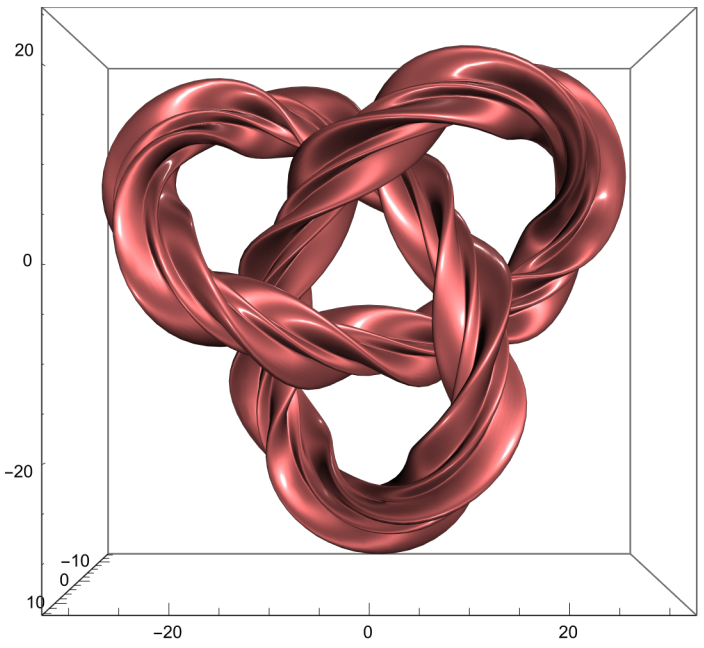
Out[ ]=
```
{{Cos[t], -Sin[t]}, {Sin[t], Cos[t]}}
```

In[ ]:=
```
{13, 14, 2} × {4, 11, 23}
```

Out[ ]=
```
{300, -291, 87}
```

In[ ]:=
```
x = Cos;
```
余弦
```
y = Sin;
```
正弦
```
c = KnotData[{3, 1}, "SpaceCurve"]@u;
```
纽结数据
```
n = FrenetSerretSystem[c, u][[-1, 2 ;;]];
```
弗莱纳系统
```
ParametricPlot3D[9 c + RotationMatrix[5 u].{x@v, y@v}.n (3 + x[3 v] + x[6 v]),
```
绘制三维参数图 旋转矩阵
```
 {u, 0, 2 Pi}, {v, 0, 2 Pi}, PlotStyle → MaterialShading@{"Glazed", Pink},
```
圆周率 … 绘图样式 材质效果图 粉色
```
 Lighting → "ThreePoint", Mesh → None, PlotPoints → 50, ViewPoint → Top]
```
光照 网格 无 绘图点 视点 顶部

Out[ ]=



In[ ]:=
```
c
```

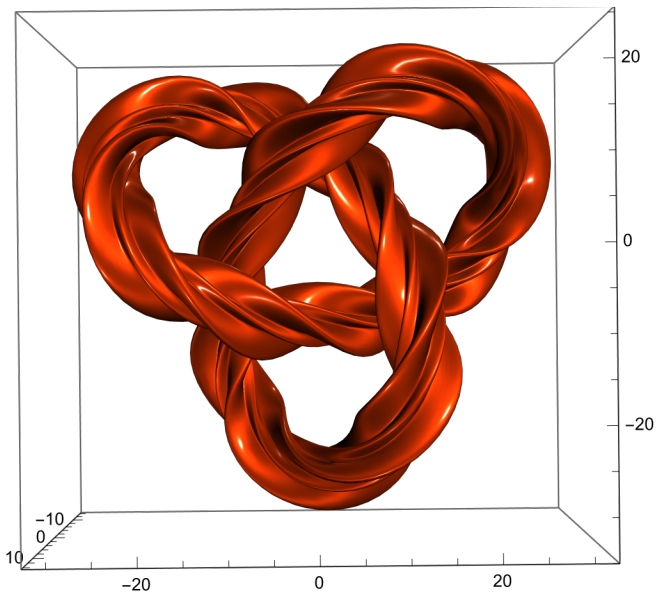
Out[ ]=
```
{Sin[u] + 2 Sin[2 u], Cos[u] - 2 Cos[2 u], -Sin[3 u]}
```

In[ ]:=
```
% // FullSimplify
```
完全简化

Out[ ]=
```
$Aborted
```

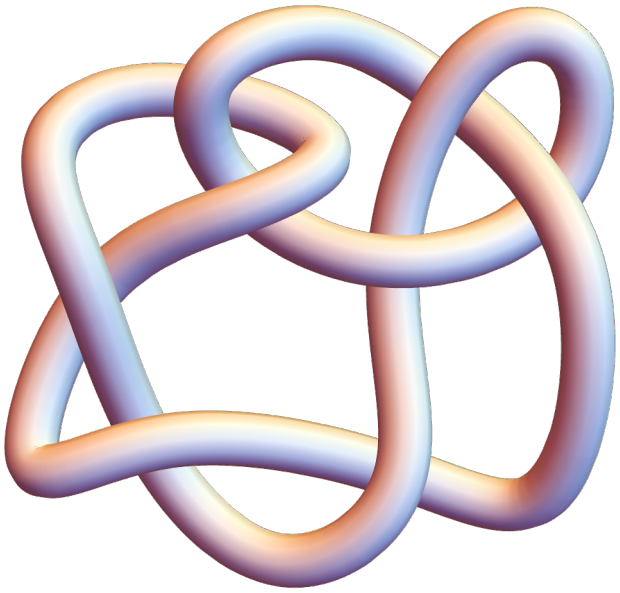
In[ ]:=
```
x = Cos;
    余弦
y = Sin;
    正弦
c = KnotData[{3, 1}, "SpaceCurve"]@u;
    纽结数据
n = FrenetSerretSystem[c, u][-1, 2 ;;];
    弗莱纳系统
ParametricPlot3D[9 c + RotationMatrix[5 u].{x@v, y@v}.n (3 + x[3 v] + x[6 v]),
绘制三维参数图                旋转矩阵
 {u, 0, 2 Pi}, {v, 0, 2 Pi}, PlotStyle → MaterialShading@"Glazed",
          圆周率          ⋯   绘图样式        材质效果图
 Lighting → "ThreePoint", Mesh → None, PlotPoints → 50, ViewPoint → Top]
 光照                      网格   无   绘图点              视点          顶部
```

Out[ ]=



In[ ]:=
```
c = KnotData[{8, 8}]
```
纽结数据

Out[ ]=



In[ ]:=
```
c = KnotData[{8, 18}]
```
纽结数据

Out[ ]=