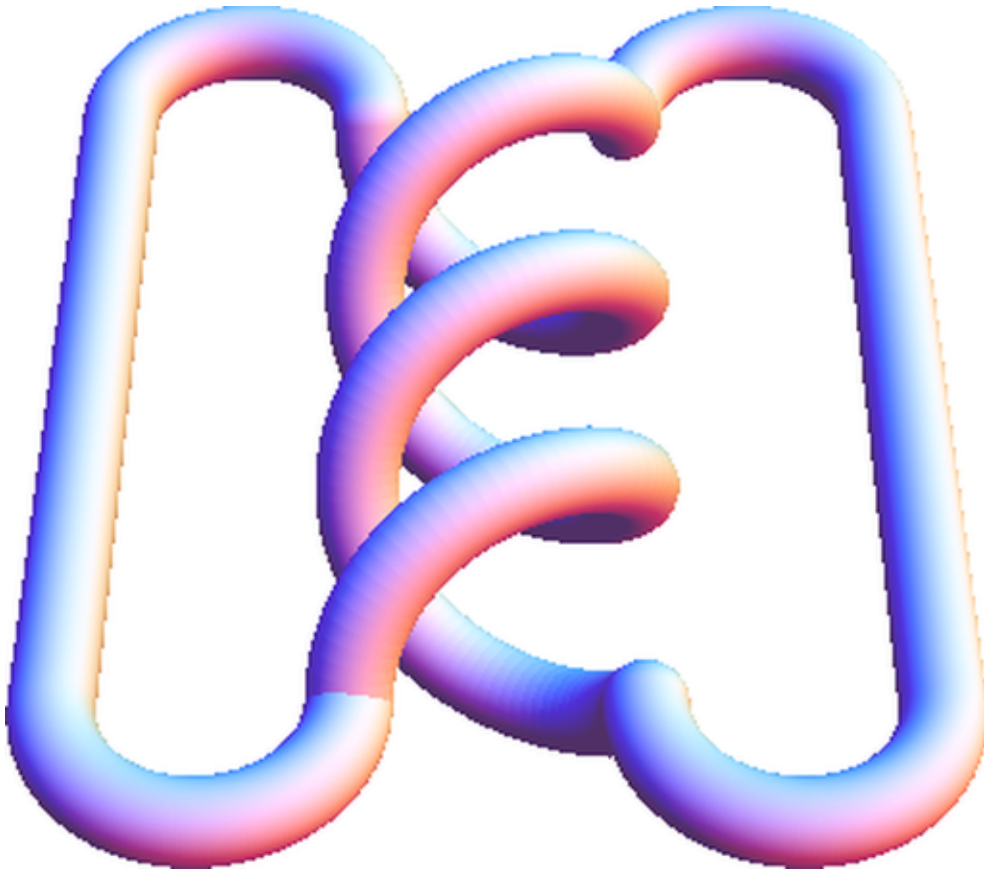


```
SetDirectory["C:\\drorbn\\AcademicPensieve\\2013-07\\Vis4D"]
```

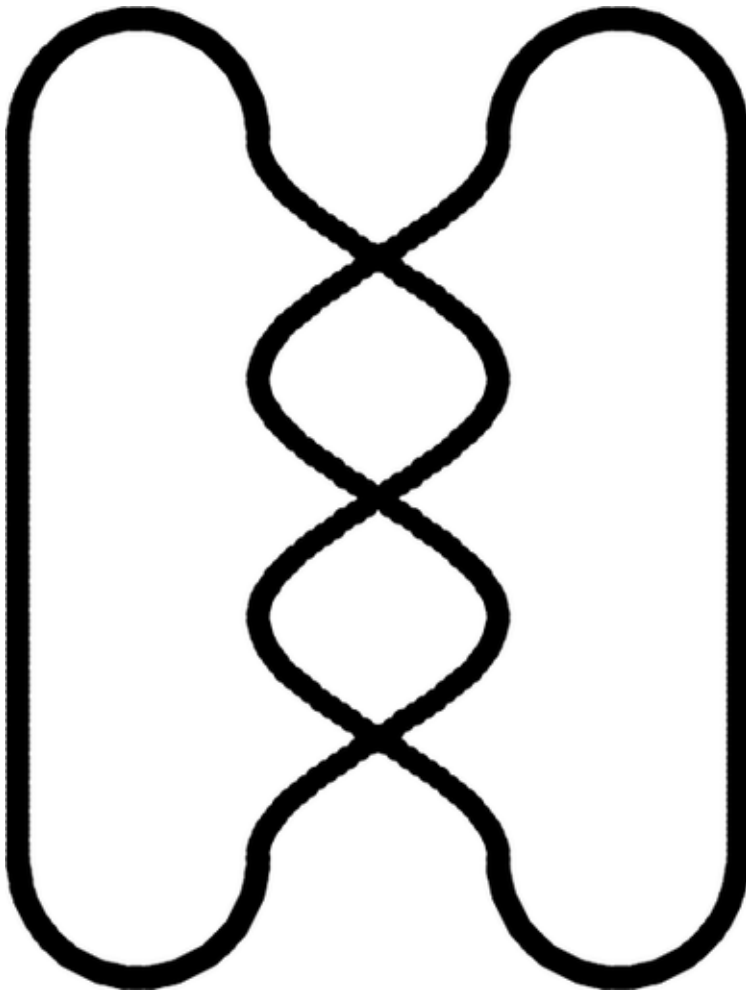
```
C:\\drorbn\\AcademicPensieve\\2013-07\\Vis4D
```

```
g[t_] := Which[
  0 ≤ (τ = t) < 1, {-Cos[3 π τ], Sin[3 π τ], 2 τ - 1},
  0 ≤ (τ == 1) < 1, {2 - Cos[π τ], 0, 1 + Sin[π τ]},
  0 ≤ (τ == 1) < 1, {3, 0, 1 - 2 τ},
  0 ≤ (τ == 1) < 1, {2 + Cos[π τ], 0, -1 - Sin[π τ]},
  0 ≤ (τ == 1) < 1, {Cos[3 π τ], -Sin[3 π τ], 2 τ - 1},
  0 ≤ (τ == 1) < 1, {-2 + Cos[π τ], 0, 1 + Sin[π τ]},
  0 ≤ (τ == 1) < 1, {-3, 0, 1 - 2 τ},
  0 ≤ (τ == 1) ≤ 1, {-2 - Cos[π τ], 0, -1 - Sin[π τ]}
];
g1[t_] := g[t] /. {
  {x_, y_, z_} /; -1 ≤ z ≤ 1 ⇒ {x, 3 z, y},
  {x_, y_, z_} /; z > 1 ⇒ {x, z + 2, y},
  {x_, y_, z_} /; z < -1 ⇒ {x, z - 2, y}
};
```

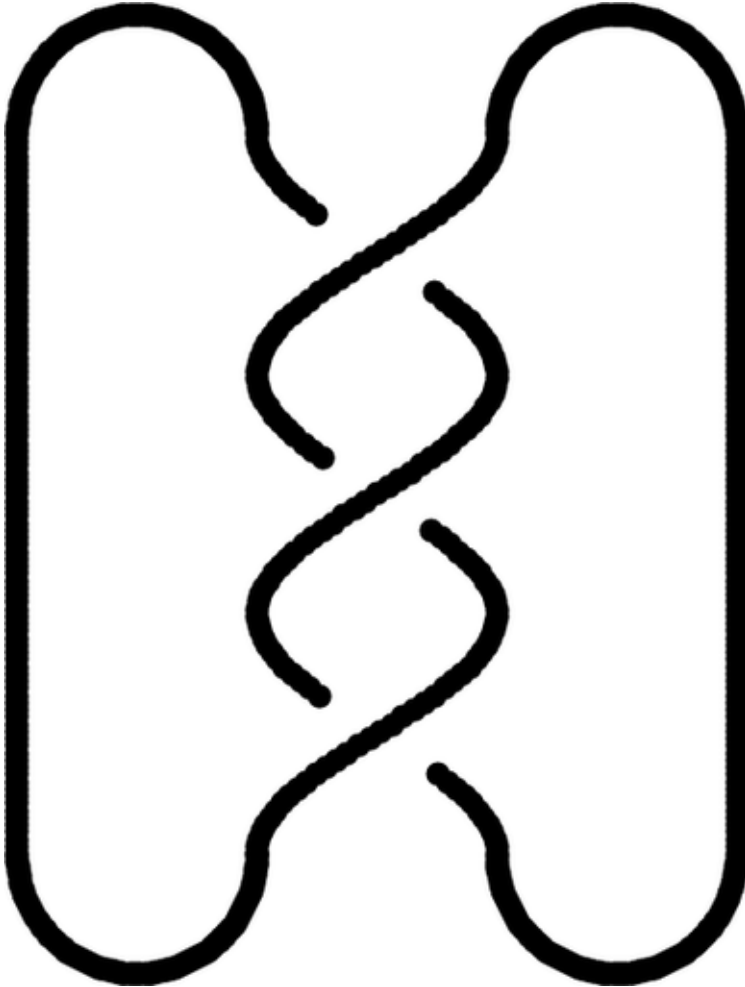
```
MakeImage["Trefoil3D",  
Graphics3D[Tube[  
  Table[g1[t], {t, 0, 8, 0.01}], 0.3  
],  
PlotRange → {All, All, {-4.1, 4.1}}, Boxed → False, ViewPoint → {0, 2, 2}],  
ImageSize → {600}]
```



```
MakeImage["TrefoilBlack",  
Graphics[Table[  
  gl[t] /. {x_, y_, z_} => {  
    Disk[{x, y}, 0.1]  
  },  
  {t, 0, 8, 0.01}  
]],  
ImageSize -> {600}]
```



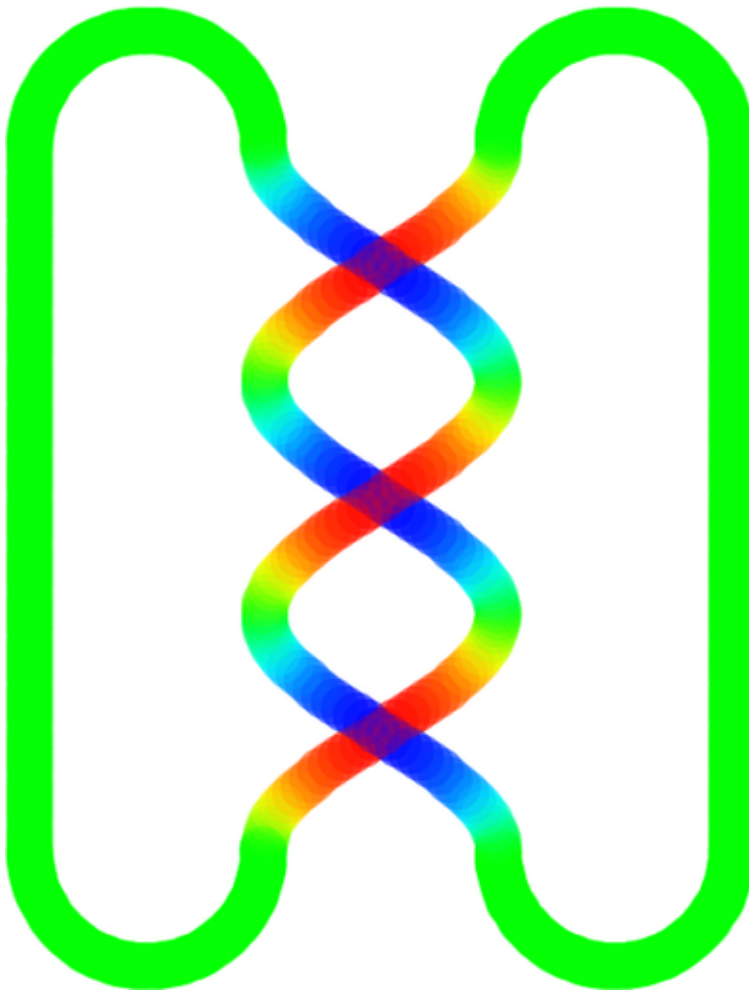
```
MakeImage["TrefoilBroken",  
Graphics[Table[  
  If[Min[Abs[t - {4 + 1/6, 0.5, 5 - 1/6}]] < 0.05, {}],  
  g1[t] /. {x_, y_, z_} => {  
    Disk[{x, y}, 0.1]  
  }  
],  
{t, 0, 8, 0.01}  
]],  
ImageSize -> {600}]
```



```

MakeImage["TrefoilColoured",
Graphics[
  Table[
    g1[t] /. {x_, y_, z_} -> {
      Opacity[0.1],
      Hue[(1 - z) / 3],
      Disk[{x, y}, 0.2]
    },
    {j, 10}, {t, 0, 8, 0.01}
  ]
}],
ImageSize -> {600}]

```



? RandomPermutation

RandomPermutation[*gr*] gives a pseudorandom permutation in the permutation group *gr*.

RandomPermutation[*gr*, *n*] gives a list of *n* pseudorandom permutations in the permutation group *gr*. >>