

```

plotstuff =
  TranslationTransform[ $\pi/4$  {p,  $\theta$ , q}] @ (RotationTransform[- $\pi/2$ , { $\theta$ , 1,  $\theta$ }, { $\pi$ , 1,  $\pi$ }] /@
    (RotationTransform[ $\pi$ , { $\theta$ ,  $\theta$ , 1}, { $\pi$ , 1,  $\pi$ }] /@
      Table[{ $\theta$ , r, Abs[r]^4 fi[ $\theta$ ] + 2  $\pi$  n / q + (p / q)}, {n,  $\theta$ , q + 1}])) // Simplify;

```

```

Manipulate[Show[
  ParametricPlot3D[Table[{ $\theta$ , r, Abs[r]^4 gi[ $\theta - t$ ] + 2  $\pi$  n / p + (q / p) t}, {n,  $\theta$ , q + 1}],
    { $\theta$ ,  $\theta$ , 2  $\pi$ }, {r,  $\theta$ , 1}, PlotRange -> {{ $\theta$ , 2  $\pi$ }, { $\theta$ , 2}, { $\theta$ , 2  $\pi$ }},
  ParametricPlot3D[plotstuff[t], { $\theta$ ,  $\theta$ , 4  $\pi$ }, {r,  $\theta$ , 1}, PlotStyle -> Blue],
  ParametricPlot3D[{Mod[ $\theta + \pi/2$  q, 2  $\pi$ ], 1, Mod[q / p  $\theta$ , 2  $\pi$ ]},
    { $\theta$ ,  $\theta$ , p * q  $\pi - 0.01$ }, Exclusions -> True, PlotStyle -> {Thick, Green}]
],
{t,
   $\theta$ ,
  2
   $\pi$ }]

```

```

Show[
  ParametricPlot3D[Table[{ $\theta$ , r, Abs[r]^4 gi[ $\theta$ ] + 2  $\pi$  n / p}, {n,  $\theta$ , q + 1}],
    { $\theta$ ,  $\theta$ , 2  $\pi$ }, {r,  $\theta$ , 1}, PlotRange -> {{ $\theta$ , 2  $\pi$ }, { $\theta$ , 2}, { $\theta$ , 2  $\pi$ }},
  ParametricPlot3D[Table[{Abs[r]^4 fi[ $\theta$ ] + 2 n  $\pi$  / q +  $\pi$  / p
    , 1 + (1 - r),  $\theta + \pi/4$ }, {n,  $\theta$ , q + 1}], { $\theta$ , -2  $\pi$ , 4  $\pi$ },
    {r,  $\theta$ , 1}, PlotRange -> {{ $\theta$ , 2  $\pi$ }, { $\theta$ , 2}, { $\theta$ , 2  $\pi$ }}, PlotStyle -> Blue],
  ParametricPlot3D[{Mod[ $\theta + \pi/2$  q, 2  $\pi$ ], 1, Mod[q / p  $\theta$ , 2  $\pi$ ]},
    { $\theta$ ,  $\theta$ , p * q  $\pi - 0.01$ }, Exclusions -> True, PlotStyle -> {Thick, Green}]
]

```

```

Manipulate[
  Show[
    ParametricPlot3D[Table[{ $\theta$ , r, Abs[r]^4 gi[ $\theta - t/3$ ] + 2  $\pi$  n / p + q / p (t / 3)}, {n,  $\theta$ , q + 1}],
      { $\theta$ ,  $\theta$ , 2  $\pi$ }, {r,  $\theta$ , 1}, PlotRange -> {{ $\theta$ , 2  $\pi$ }, { $\theta$ , 2}, { $\theta$ , 2  $\pi$ }},
    ParametricPlot3D[Table[{Abs[r]^4 fi[ $\theta - t/2$ ] + 2 n  $\pi$  / q +  $\pi$  / p + p / q (t / 2)
      , 1 + (1 - r),  $\theta + \pi/4$ }, {n,  $\theta$ , q + 1}], { $\theta$ , -2  $\pi$ , 4  $\pi$ },
      {r,  $\theta$ , 1}, PlotRange -> {{ $\theta$ , 2  $\pi$ }, { $\theta$ , 2}, { $\theta$ , 2  $\pi$ }}, PlotStyle -> Blue],
    ParametricPlot3D[{Mod[ $\theta + \pi/2$  q, 2  $\pi$ ], 1, Mod[q / p  $\theta$ , 2  $\pi$ ]},
      { $\theta$ ,  $\theta$ , p * q  $\pi - 0.01$ }, Exclusions -> True, PlotStyle -> {Thick, Green}]
  ],
{t,
   $\theta$ ,
  2
   $\pi$ }]

```

```

Manipulate[
  Show[
    ParametricPlot3D[Table[{Abs[r]^4 fi[θ - t] + 2 n π / q + π / p + p / q t
      , 1 + (1 - r), θ + π / 4}, {n, 0, q + 1}], {θ, -2 π, 4 π},
      {r, 0, 1}, PlotRange → {{0, 2 π}, {0, 2}, {0, 2 π}}, PlotStyle → Blue],
    ParametricPlot3D[{Mod[θ + π / 2 q, 2 π], 1, Mod[q / p θ, 2 π]},
      {θ, 0, p * q π - 0.01}, Exclusions → True, PlotStyle → {Thick, Green}]
  ],
  {t,
    0,
    2
    π}]

```