```mathematica
ReIm := {Re@#, Im@#} &
SterProj[{{z1_, z2_}, {w1_, w2_}}] := { z1/(1 - w2) , z2/(1 - w2) , w1/(1 - w2) };

T2 = {α Exp[I θ] / Sqrt[2], Exp[I ϕ] / Sqrt[2]};

ReIm@ (ComplexExpand /@ T2)

T = ReIm /@ {Sin[α] Exp[I θ], Cos[α] Exp[I ϕ]}


SterProj[T]

Manipulate[ParametricPlot3D[SterProj[T] /. α → A, {θ, 0, 2 Pi}, {ϕ, 0, 2 Pi}], {A, 0, Pi / 2}]

ParametricPlot3D[SterProj[T] /. α → π / 8, {θ, 0, 2 Pi}, {ϕ, 0, 2 Pi}]

ParametricPlot3D[knot, {θ, 0, 2 π}, PlotStyle → {Thick, Blue}]

ParametricPlot3D[
 {r Sin[θ], r Cos[θ], 1 / 3 Abs[Cos[θ] + ⅈ Sin[θ]]^3 Arg[- (Cos[θ] + ⅈ Sin[θ])^2]},
 {θ, 0, 2 Pi}, {r, 0, 1}, PlotPoints → 50]

Abs[x + I y]^3 Arg[(x + I y)^3] / 2

Plot3D[1/2 Abs[x + ⅈ y]^3 Arg[(x + ⅈ y)^3], {x, -20., 20.}, {y, -20., 20.}]

surface = Table[{r Sin[θ], r Cos[θ], π n + 1/3 ⅇ^(-3 Im[θ]) Abs[r]^3 Arg[ⅇ^(2 ⅈ θ) r^2]}, {n, 0, 2}]

knot = {{Sin[3 θ/2], Cos[3 θ/2], 2 n π/3 + θ}, {-Sin[3 θ/2], -Cos[3 θ/2], 2 n π/3 + θ}} /. n → 0

Abs[x + I y]^3 Arg[(x + I y)^2] / 3 /. (x + I y) → r Exp[I θ]

Abs[x + I y]^3 Arg[(x + I y)^2] / 3 /. (x + I y) → r Exp[I θ] // Simplify

Plot3D[Abs[x + I y]^3 Arg[(x + I y)^2] / 3, {x, -1, 1},
 {y, -1, 1}, Exclusions → None, RegionFunction → ((#1^2 + #2^2) < 1 &)]
ParametricPlot3D[{r Sin[θ], r Cos[θ],
  Abs[x + I y]^3 Arg[(x + I y)^2] / 3 /. (x + I y) → r Exp[I θ]}, {θ, 0, 2 Pi}, {r, 0, 1}]

ParametricPlot3D[surface, {θ, 0, 2 Pi}, {r, 0, 1}]

outsidesurface = Table[{1 / r Sin[θ], 1 / r Cos[θ],
   (π n + 1/3 Abs[x + ⅈ y]^3 Arg[Exp[n I π] (x + ⅈ y)^2]) /. {x → Cos[θ], y → Sin[θ]} }, {n, 0, 2}]
```

```mathematica
Show[
  ParametricPlot3D[{Sin[θ + π/2]/r, Cos[θ + π/2]/r, 2 π/3 + 1/3 Abs[Exp[I θ]]^3 Arg[-Exp[I θ]^2]},
   {θ, 0, Pi/2}, {r, 0, 1}, PlotRange → {{-3, 3}, {-3, 3}, {0, 7}}, PlotPoints → 20],
  ParametricPlot3D[{Sin[θ + 3 π/2]/r, Cos[θ + 3 π/2]/r,
    2 π/3 + 1/3 Abs[Exp[I θ]]^3 Arg[-Exp[I θ]^2]}, {θ, 0, Pi/2},
   {r, 0, 1}, PlotRange → {{-3, 3}, {-3, 3}, {0, 7}}, PlotPoints → 20],
  ParametricPlot3D[{Sin[θ + π]/r, Cos[θ + π]/r, 5 π/3 + 1/3 Abs[Exp[I θ]]^3 Arg[-Exp[I θ]^2]},
   {θ, 0, Pi/2}, {r, 0, 1}, PlotRange → {{-3, 3}, {-3, 3}, {0, 7}}, PlotPoints → 20],
  ParametricPlot3D[{Sin[θ + 2 π]/r, Cos[θ + 2 π]/r, 5 π/3 + 1/3 Abs[Exp[I θ]]^3 Arg[-Exp[I θ]^2]},
   {θ, 0, Pi/2}, {r, 0, 1}, PlotRange → {{-3, 3}, {-3, 3}, {0, 7}}, PlotPoints → 20],
  ParametricPlot3D[{{r Sin[θ], r Cos[θ], 1/3 ℯ^-3 Im[θ] Abs[r]^3 Arg[ℯ^2 i θ r^2]},
    {r Sin[θ + π/2], r Cos[θ + π/2], π + 1/3 ℯ^-3 Im[θ] Abs[r]^3 Arg[ℯ^2 i θ r^2]},
    {r Sin[θ], r Cos[θ], 2 π + 1/3 ℯ^-3 Im[θ] Abs[r]^3 Arg[ℯ^2 i θ r^2]}},
   {θ, 0, 2 Pi}, {r, 0, 1}, Exclusions → None],
  ParametricPlot3D[knot, {θ, 0, 2 π}, PlotStyle → {Thick, Blue}]
]
Show[
  ParametricPlot3D[{Sin[θ + π/2]/r, Cos[θ + π/2]/r, 2 π/3 + 1/3 Abs[Exp[I θ]]^3 Arg[-Exp[I θ]^2]},
   {θ, 0, Pi/2}, {r, 0, 1}, PlotRange → {{-3, 3}, {-3, 3}, {0, 7}}, PlotPoints → 20],
  ParametricPlot3D[{Sin[θ + 3 π/2]/r, Cos[θ + 3 π/2]/r,
    2 π/3 + 1/3 Abs[Exp[I θ]]^3 Arg[-Exp[I θ]^2]}, {θ, 0, Pi/2},
   {r, 0, 1}, PlotRange → {{-3, 3}, {-3, 3}, {0, 7}}, PlotPoints → 20],
  ParametricPlot3D[{Sin[θ + π]/r, Cos[θ + π]/r, 5 π/3 + 1/3 Abs[Exp[I θ]]^3 Arg[-Exp[I θ]^2]},
   {θ, 0, Pi/2}, {r, 0, 1}, PlotRange → {{-3, 3}, {-3, 3}, {0, 7}}, PlotPoints → 20],
  ParametricPlot3D[{Sin[θ + 2 π]/r, Cos[θ + 2 π]/r, 5 π/3 + 1/3 Abs[Exp[I θ]]^3 Arg[-Exp[I θ]^2]},
   {θ, 0, Pi/2}, {r, 0, 1}, PlotRange → {{-3, 3}, {-3, 3}, {0, 7}}, PlotPoints → 20],
  ParametricPlot3D[{{r Sin[θ], r Cos[θ], 1/3 ℯ^-3 Im[θ] Abs[r]^3 Arg[ℯ^2 i θ r^2]},
    {r Sin[θ + π/2], r Cos[θ + π/2], π + 1/3 ℯ^-3 Im[θ] Abs[r]^3 Arg[ℯ^2 i θ r^2]},
    {r Sin[θ], r Cos[θ], 2 π + 1/3 ℯ^-3 Im[θ] Abs[r]^3 Arg[ℯ^2 i θ r^2]}}, {θ, 0, 2 Pi}, {r, 0, 1}],
  ParametricPlot3D[knot, {θ, 0, 2 π}, PlotStyle → {Thick, Blue}]
]
```

```mathematica
Theta[{x_, y_, z_}] := ArcTan[x, y]
Phi[{x_, y_, z_}] := z
Torus[α_, θ_, ϕ_] := ReIm /@ {Sin[α] Exp[I θ], Cos[α] Exp[I ϕ]}

Show[
 ParametricPlot3D[SterProj@(Torus[r, Theta[#], Phi[#]]) &@
   {Sin[θ + π/2]/r, Cos[θ + π/2]/r, 2 π/3 + 1/3 Abs[Exp[I θ]]³ Arg[-Exp[I θ]²]},
  {θ, 0, 2 Pi}, {r, 0, 1}, PlotPoints → 100],
 ParametricPlot3D[SterProj@(Torus[r, Theta[#], Phi[#]]) &@
   {Sin[θ + 3 π/2]/r, Cos[θ + 3 π/2]/r, 2 π/3 + 1/3 Abs[Exp[I θ]]³ Arg[-Exp[I θ]²]},
  {θ, 0, 2 Pi}, {r, 0, 1}, PlotPoints → 100],

 ParametricPlot3D[SterProj@(Torus[r, Theta[#], Phi[#]]) &@
   {Sin[θ + π]/r, Cos[θ + π]/r, 5 π/3 + 1/3 Abs[Exp[I θ]]³ Arg[-Exp[I θ]²]},
  {θ, 0, 2 Pi}, {r, 0, 1}, PlotPoints → 100],

 ParametricPlot3D[SterProj@(Torus[r, Theta[#], Phi[#]]) &@
   {Sin[θ + 2 π]/r, Cos[θ + 2 π]/r, 5 π/3 + 1/3 Abs[Exp[I θ]]³ Arg[-Exp[I θ]²]},
  {θ, 0, 2 Pi}, {r, 0, 1}, PlotPoints → 100]
]

Theta@{r Sin[θ], r Cos[θ], π + 1/3 Abs[Cos[θ] + i Sin[θ]]³ Arg[-(Cos[θ] + i Sin[θ])²]}


ParametricPlot3D[SterProj /@ (Torus[r, Theta[#], Phi[#]] & /@ surface),
 {θ, 0, 2 Pi}, {r, 0.9, 1}, PlotPoints → 100]

ParametricPlot3D[SterProj /@ (Torus[r, Theta[#], Phi[#]] & /@ knot),
 {θ, 0, 2 Pi}, {r, 0.99, 1}, PlotPoints → 50]
```

```
Show[
 ParametricPlot3D[SterProj /@ (Torus[r, Theta[#], Phi[#]] & /@ knot),
  {θ, 0, 2 Pi}, {r, 0.99, 1}, PlotPoints → 50, MeshStyle → None,
  PlotStyle → Red, PlotRange → {{-5, 5}, {-5, 5}, {-5, 5}}],
 ParametricPlot3D[SterProj /@ (Torus[r, Theta[#], Phi[#]] & /@ surface),
  {θ, 0, 2 Pi}, {r, 0, 1}, PlotPoints → 50, MeshStyle → None, PlotStyle → Blue],
 ParametricPlot3D[SterProj @ (Torus[r, Theta[#], Phi[#]]) &@
   {Sin[θ + π/2]/r, Cos[θ + π/2]/r, 2 π/3 + 1/3 Abs[Exp[I θ]]^3 Arg[-Exp[I θ]^2]},
  {θ, 0, 2 Pi}, {r, 0, 1}, PlotPoints → 100],
 ParametricPlot3D[SterProj @ (Torus[r, Theta[#], Phi[#]]) &@
   {Sin[θ + 3 π/2]/r, Cos[θ + 3 π/2]/r, 2 π/3 + 1/3 Abs[Exp[I θ]]^3 Arg[-Exp[I θ]^2]},
  {θ, 0, 2 Pi}, {r, 0, 1}, PlotPoints → 100],

 ParametricPlot3D[SterProj @ (Torus[r, Theta[#], Phi[#]]) &@
   {Sin[θ + π]/r, Cos[θ + π]/r, 5 π/3 + 1/3 Abs[Exp[I θ]]^3 Arg[-Exp[I θ]^2]},
  {θ, 0, 2 Pi}, {r, 0, 1}, PlotPoints → 100],

 ParametricPlot3D[SterProj @ (Torus[r, Theta[#], Phi[#]]) &@
   {Sin[θ + 2 π]/r, Cos[θ + 2 π]/r, 5 π/3 + 1/3 Abs[Exp[I θ]]^3 Arg[-Exp[I θ]^2]},
  {θ, 0, 2 Pi}, {r, 0, 1}, PlotPoints → 100]
]
```

```mathematica
Show[
 ParametricPlot3D[SterProj /@ (Torus[r, Theta[#], Phi[#]] & /@ knot),
  {θ, 0, 2 Pi}, {r, 0.99, 1}, PlotPoints → 50, MeshStyle → None,
  PlotStyle → Red, PlotRange → {{-2, 2}, {-2, 2}, {-2, 2}}],
 ParametricPlot3D[SterProj /@ (Torus[r, Theta[#], Phi[#]] & /@ surface),
  {θ, 0, 2 Pi}, {r, 0, 1}, PlotPoints → 50, MeshStyle → None, PlotStyle → Blue],

 ParametricPlot3D[SterProj@(Torus[r, Theta[#], Phi[#]]) &@
   {Sin[θ + π/2]/r, Cos[θ + π/2]/r, 2 π/3 + 1/3 Abs[Exp[I θ]]^3 Arg[-Exp[I θ]^2]},
  {θ, 0, 2 Pi}, {r, 0, 1}, PlotPoints → 100],
 ParametricPlot3D[SterProj@(Torus[r, Theta[#], Phi[#]]) &@
   {Sin[θ + 3 π/2]/r, Cos[θ + 3 π/2]/r, 2 π/3 + 1/3 Abs[Exp[I θ]]^3 Arg[-Exp[I θ]^2]},
  {θ, 0, 2 Pi}, {r, 0, 1}, PlotPoints → 100],

 ParametricPlot3D[SterProj@(Torus[r, Theta[#], Phi[#]]) &@
   {Sin[θ + π]/r, Cos[θ + π]/r, 5 π/3 + 1/3 Abs[Exp[I θ]]^3 Arg[-Exp[I θ]^2]},
  {θ, 0, 2 Pi}, {r, 0, 1}, PlotPoints → 100],

 ParametricPlot3D[SterProj@(Torus[r, Theta[#], Phi[#]]) &@
   {Sin[θ + 2 π]/r, Cos[θ + 2 π]/r, 5 π/3 + 1/3 Abs[Exp[I θ]]^3 Arg[-Exp[I θ]^2]},
  {θ, 0, 2 Pi}, {r, 0, 1}, PlotPoints → 100]

]
```