Figure: radialVectorCylindricalFig1.eps. Notebook uses a dynamic (Manipulate) to generate the figure at a desirable angle and radius.

```
<< peeters` ;
peeters`setGitDir[ "../project/figures/GAelectrodynamics" ]

/Users/pjoot/project/figures/GAelectrodynamics

ClearAll[e1, e2, o, rcap, tcap, fs, esub, bold, rcaptxt, tcaptxt]
{e1, e2} = IdentityMatrix[2];
rcap[t_] := e1 Cos[t] + e2 Sin[t];
tcap[t_] := e2 Cos[t] - e1 Sin[t];
o = {0, 0};

fs = Style[#, FontSize → 14] &;
bold = Style[#, Bold] &;
esub = Subscript[ "e" // bold, #] &;
rcaptxt = OverHat["r"] // bold // fs;
tcaptxt = OverHat["θ"] // bold // fs;
Module[{s, range},
 s = 3;
 range = {-s - 1 / 5, s + 1 / 5};
 range = {-1 / 5, s + 1 / 5};
 Manipulate[
  Show[{
    ListPlot[{o}, PlotRange → {range, range}, AspectRatio → 1, Ticks → None],
    Graphics[{
      Blue,
      Arrow[{o, r rcap[t]}],
      Black,
      Arrow[{o, e1}],
```
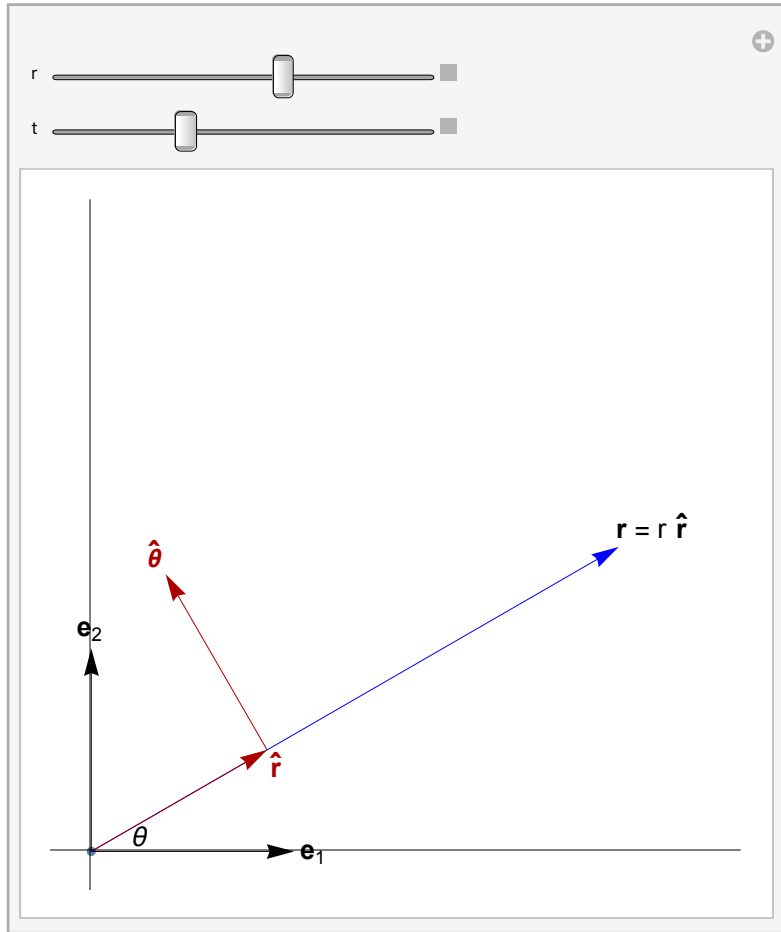
```
        Arrow[{o, e2}],
        Red // Darker,
        Arrow[{o, rcap[t]}],
        Arrow[{rcap[t], rcap[t] + tcap[t]}],
        Black,
        Text["θ" // fs, rcap[t / 2] / 4],
        (*Text["r" // fs, r rcap[t]/2 + 0.1 tcap[t]],*)
        Text[esub[1] // fs, 1.1 e1 (*+ 0.1 e2*)],
        Text[esub[2] // fs, 1.1 e2 (*+ 0.1 e1*)],
        Text[Row[{
            "r" // bold // fs,
            " = r " // fs,
            rcaptxt}],
          (r + 0.2) rcap[t]],
        Red // Darker,
        Text[rcaptxt, rcap[t] - 0.1 tcap[t]],
        Text[tcaptxt, rcap[t] + 1.1 tcap[t]]
      }]
   }]
 , {{r, s}, 1, s Sqrt[2]}
 , {{t, Pi / 6}, 0, Pi / 2}
 (*,{{t,Pi/3}, 0, 2 Pi}*)
 ]
]
```

Out[11]=

```
p = DynamicModule[{r = 3, t = π/6},
  Show[{ListPlot[{o}, PlotRange → {range$31592, range$31592}, AspectRatio → 1,
      Ticks → None], Graphics[{Blue, Arrow[{o, r rcap[t]}], Black,
      Arrow[{o, e1}], Arrow[{o, e2}], Darker[Red], Arrow[{o, rcap[t]}],
      Arrow[{rcap[t], rcap[t] + tcap[t]}], Black, Text[fs["θ"], 1/4 rcap[t/2]],
      Text[fs[esub[1]], 1.1` e1], Text[fs[esub[2]], 1.1` e2],
      Text[Row[{fs[bold["r"]], fs[" = r "], rcaptxt}], (r + 0.2`) rcap[t]],
      Darker[Red], Text[rcaptxt, rcap[t] - 0.1` tcap[t]],
      Text[tcaptxt, rcap[t] + 1.1` tcap[t]]}]}]]
```
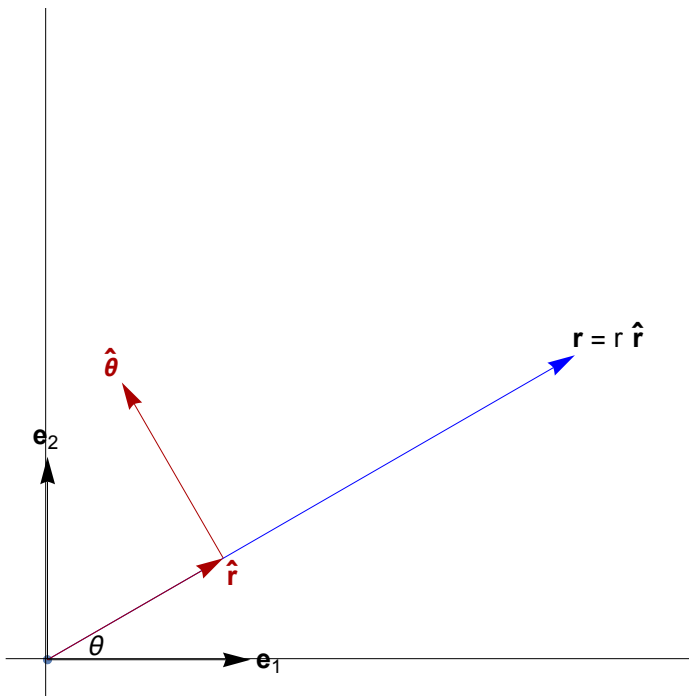


```
peeters`exportForLatex["radialVectorCylindricalFig1", p]
{radialVectorCylindricalFig1.eps, radialVectorCylindricalFig1pn.png}
```