

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

In[305]:= 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};

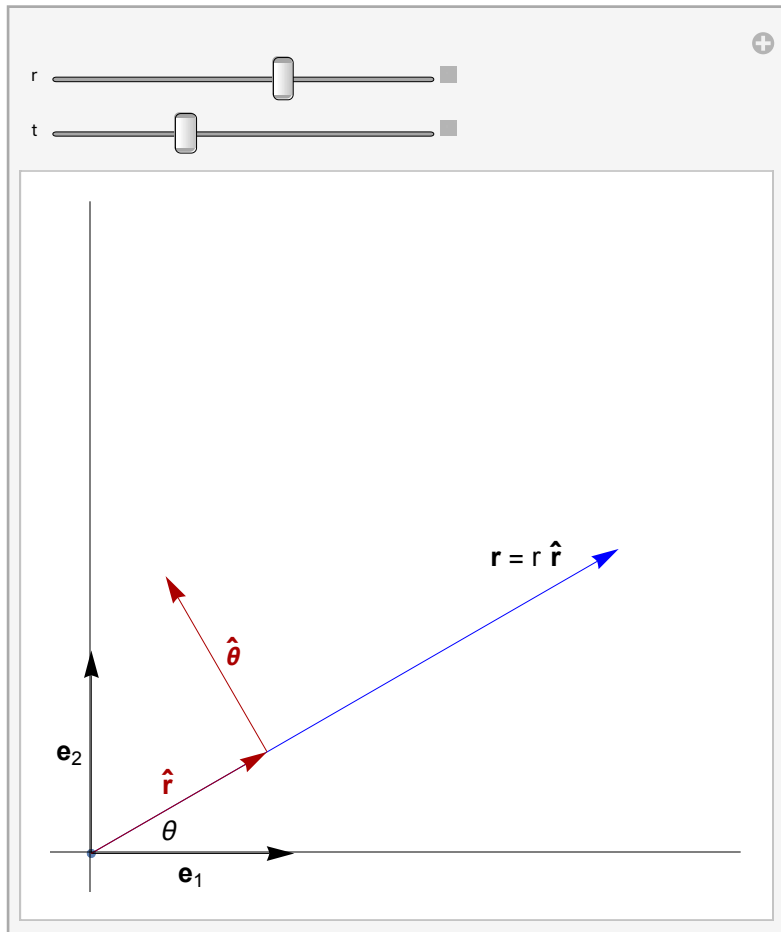
fs = Style[#, FontSize → 14] &;
bold = Style[#, Bold] &;
esub = Subscript["e" // bold, #] &;
rcaptxt = OverHat["r"] // bold // fs;
tcaptxt = OverHat["θ"] // bold // fs;
Module[{s, range},
  s = 3;
  range = {-s - 1/5, s + 1/5};
  range = {-1/5, s + 1/5};
  Manipulate[
    Show[{
      ListPlot[{o}, PlotRange → {range, range}, AspectRatio → 1, Ticks → None],
      Graphics[{
        Blue,
        Arrow[{o, r rcap[t]}],
        Black,
        Arrow[{o, e1}],
```

```

    Arrow[{0, e2}],
    Red // Darker,
    Arrow[{0, rcap[t]}],
    Arrow[{rcap[t], rcap[t] + tcap[t]}],
    Black,
    Text[" $\theta$ " // fs, 0.4 rcap[t/2]],
    (*Text["r" // fs, r rcap[t]/2 + 0.1 tcap[t]],*)
    Text[esub[1] // fs, 0.5 e1 - 0.1 e2],
    Text[esub[2] // fs, 0.5 e2 - 0.1 e1],
    Text[Row[{
        "r" // bold // fs,
        " = r " // fs,
        rcaptxt}],
        (r - 0.4) rcap[t] + 0.2 tcap[t]],
    Red // Darker,
    Text[rcaptxt, rcap[t] / 2 + 0.1 tcap[t]],
    Text[tcaptxt, 1.1 rcap[t] + 0.5 tcap[t]]
    }]
    }]
    , {{r, s}, 1, s Sqrt[2]}
    , {{t, Pi/6}, 0, Pi/2}
    (*, {{t, Pi/3}, 0, 2 Pi}*)
]
]

```

Out[315]=

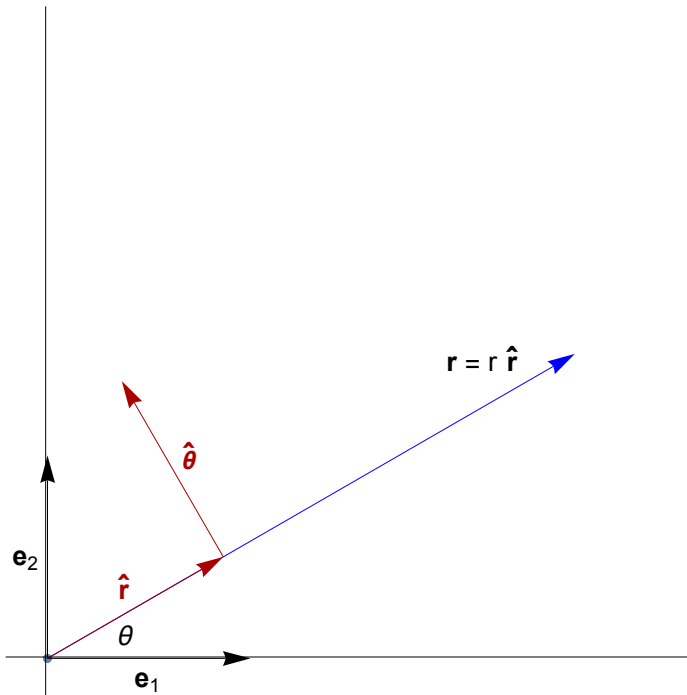


```

In[316]:= p = DynamicModule[{r = 3, t =  $\frac{\pi}{6}$ },
  Show[{{ListPlot[{o}], PlotRange → {range$38552, range$38552}, 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"], 0.4` rcap[ $\frac{t}{2}$ ]],
    Text[fs[esub[1]], 0.5` e1 - 0.1` e2], Text[fs[esub[2]], 0.5` e2 - 0.1` e1], Text[
    Row[{fs[bold["r"]], fs[" = r "], rcaptxt}], (r - 0.4`) rcap[t] + 0.2` tcap[t]],
    Darker[Red], Text[rcaptxt,  $\frac{rcap[t]}{2}$  + 0.1` tcap[t]],
    Text[tcaptxt, 1.1` rcap[t] + 0.5` tcap[t]}]}]}]]

```

Out[316]=



In[317]:=

In[281]:=

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In[318]:= peeters`exportForLatex["radialVectorCylindricalFig1", p]

```

Out[318]= {radialVectorCylindricalFig1.eps, radialVectorCylindricalFig1pn.png}