In[316]:=
```
AreaT[d_, n_] :=
  Module[
   {dir = d, name = n},
   {nparticles, dt, particlesT} = ParticleTimeSeries[dir, name];
   nt = Length[particlesT];
   l = Norm[particlesT[[1, 1, 3 ;; 4]]];
   anglesT = ArcTan[particlesT[[All, All, 4]], particlesT[[All, All, 3]]];
   sinT = Sin[anglesT];
   cosT = Cos[anglesT];
   xmax = Table[Max[particlesT[[t, All, 1]] + l / 2 * cosT[[t]]], {t, 1, nt}];
   xmin = Table[Min[particlesT[[t, All, 1]] + l / 2 * cosT[[t]]], {t, 1, nt}];
   ymax = Table[Max[particlesT[[t, All, 2]] + l / 2 * sinT[[t]]], {t, 1, nt}];
   ymin = Table[Min[particlesT[[t, All, 2]] + l / 2 * sinT[[t]]], {t, 1, nt}];
   areaT = Table[
     {(t - 1) * dt, (xmax[[t]] - xmin[[t]]) * (ymax[[t]] - ymin[[t]])}
     , {t, 1, nt}];
   areaT
  ];
```

In[317]:=
```
ρs = {"0", ".08", ".16", ".24", ".32", ".40", ".48", ".56", ".64", ".72", ".80"};
ρdirs = Table["sticky_clnks_nm1_np500_amRho.05_pmRho" <> ρ, {ρ, ρs}];
```

In[319]:=
```
areas = Table[AreaT[mdwout <> ρdir, "rods"], {ρdir, ρdirs}];
```

In[314]:=
```
Length[areas]
```

Out[314]=
```
11
```

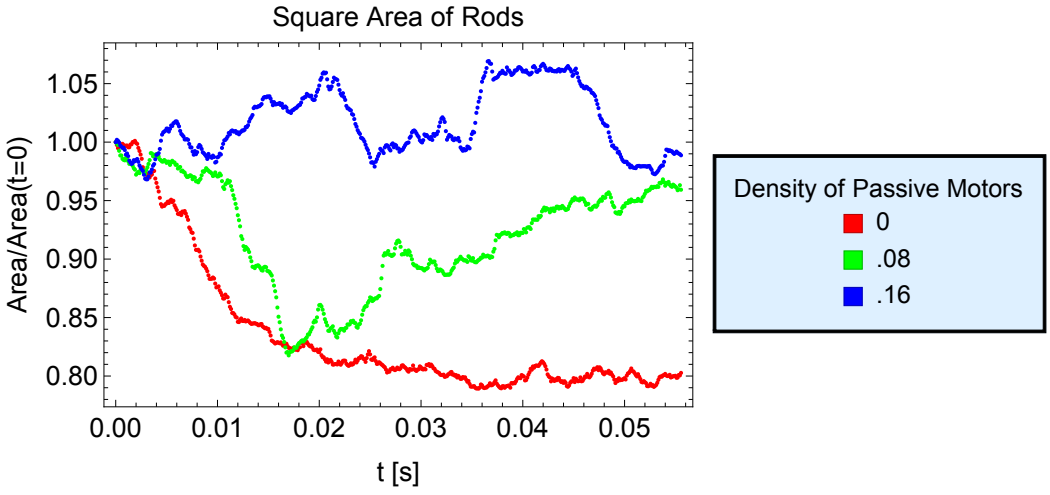
In[312]:=
```
ps = {Red, Green, Blue, Black};
```

In[331]:=
```
areas[[4 ;; 6, 1, 2]]
```

Out[331]=
```
{1800.29, 1800.29, 1800.29}
```

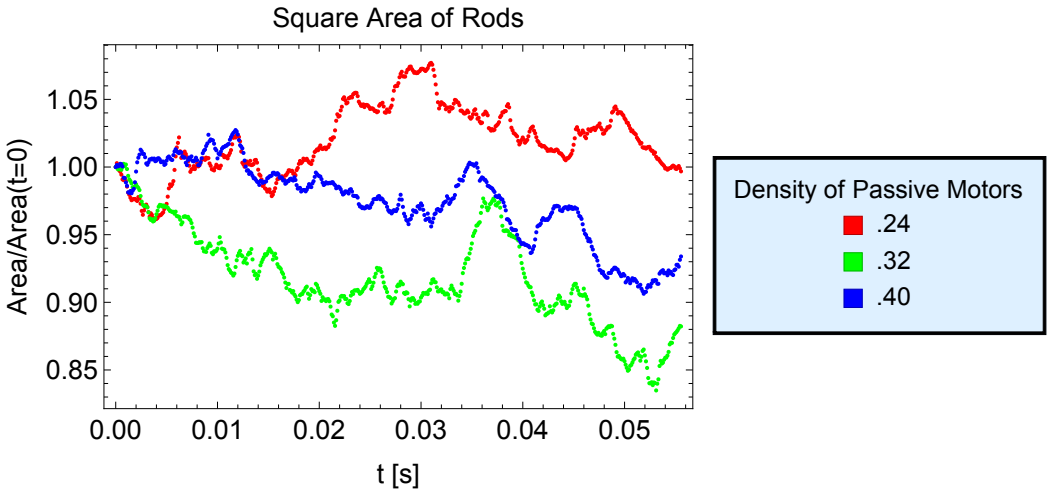
In[330]:=
```
ListPlot[areas[[1 ;; 3]] / areas[[1 ;; 3, 1, 2]], Frame → True, PlotStyle → ps,
 FrameLabel → {"t [s]", "Area/Area(t=0)", "Square Area of Rods"},
 PlotLegends → SwatchLegend[ps, ρs[[1 ;; 3]],
   LegendLabel → "Density of Passive Motors", LegendFunction →
    (Framed[#, Background → LightBlue] &)], BaseStyle → {FontSize -> 14}]
```

Out[330]=



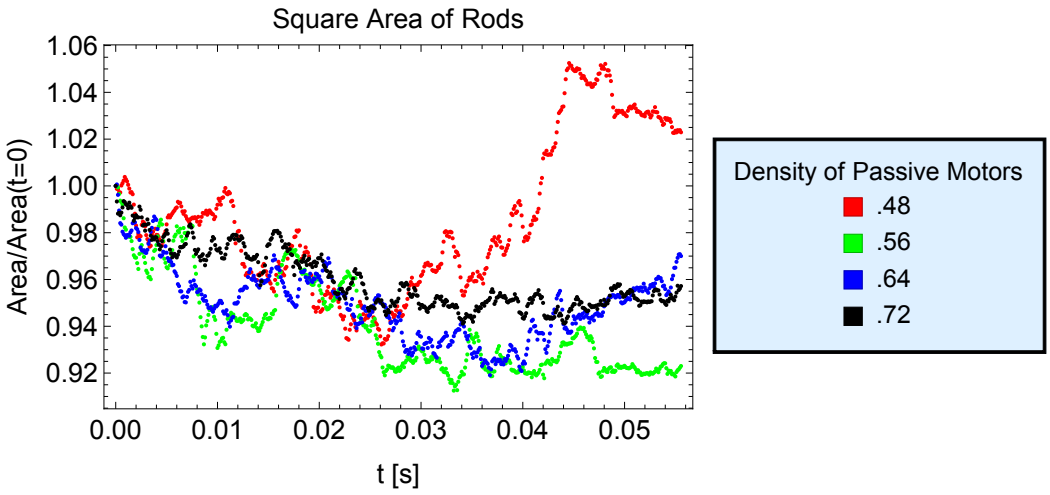
In[322]:=
```
ListPlot[areas[[4 ;; 6]] / areas[[4 ;; 6, 1, 2]], Frame → True, PlotStyle → ps,
 FrameLabel → {"t [s]", "Area/Area(t=0)", "Square Area of Rods"},
 PlotLegends → SwatchLegend[ps, ρs[[4 ;; 6]],
   LegendLabel → "Density of Passive Motors", LegendFunction →
    (Framed[#, Background → LightBlue] &)], BaseStyle → {FontSize -> 14}]
```

Out[322]=



In[323]:=
```
ListPlot[areas[[7 ;; 10]] / areas[[7 ;; 10, 1, 2]], Frame → True, PlotStyle → ps,
 FrameLabel → {"t [s]", "Area/Area(t=0)", "Square Area of Rods"},
 PlotLegends → SwatchLegend[ps, ρs[[7 ;; 10]],
   LegendLabel → "Density of Passive Motors", LegendFunction →
    (Framed[#, Background → LightBlue] &)], BaseStyle → {FontSize -> 14}]
```

Out[323]=



In[292]:=
```
Max[{{1, 2, 3}, {4, 5, 6}}]
```

Out[292]= 6

In[294]:=
```
{nparticles, dt, particlesT} = ParticleTimeSeries[mdwout <> ρdirs[[1]], "rods"];
```

In[295]:=
```
dt
```

Out[295]= 0.2

In[305]:=
```
Max[particlesT[[1, All, 1]] +
  5 * Cos[ArcTan[particlesT[[1, All, 3]], particlesT[[1, All, 4]]]]]
```

Out[305]= 14.7174

In[307]:=
```
Max[particlesT[[-1, All, 1]] +
  5 * Cos[ArcTan[particlesT[[1, All, 3]], particlesT[[1, All, 4]]]]]
```

Out[307]= 17.6923

In[303]:=
```
Max[particlesT[[-1, All, 2]]]
```

Out[303]= 15.5182

prati