In[1464]:=

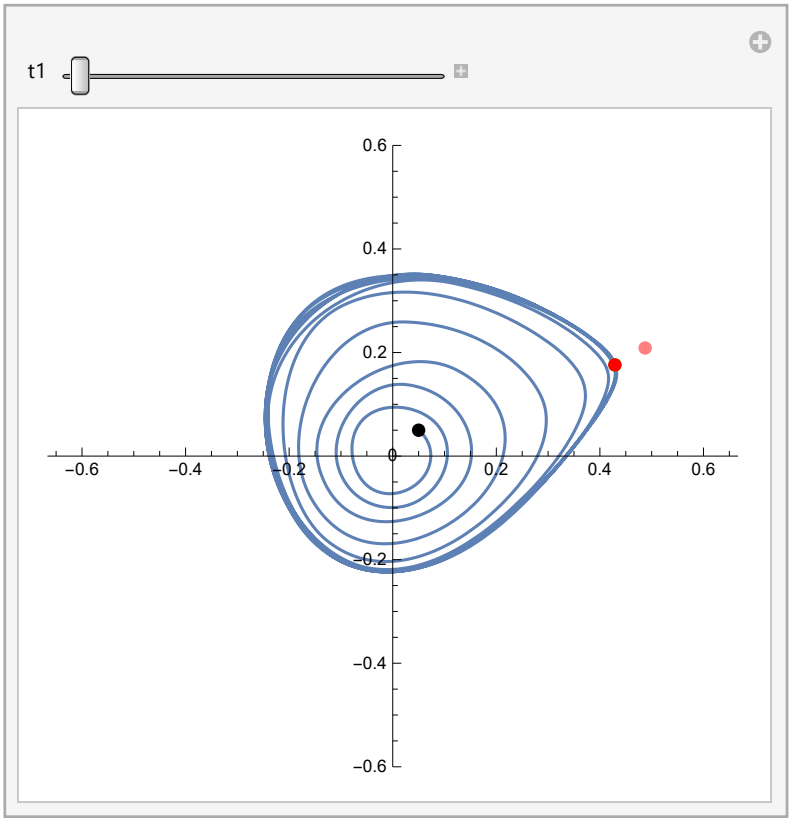
```
Clear["Global`*"]
tMax = 1000;
μ = 0.059;
sol := NDSolve[{x'[t] == μ * x[t] + y[t] - x[t]^2, y'[t] == -x[t] + μ * y[t] + 2 * x[t]^2,
   x[0] == 0.05, y[0] == 0.05}, {x, y}, {t, tMax}, Method → "StiffnessSwitching"]
xStar = (μ^2 + 1) / (μ + 2);
yStar = xStar^2 - μ * xStar;
t0 = 900;


distance[T_] = (((x[t0 - T] /. sol[[1]]) - (x[t0] /. sol[[1]]))^2 +
    ((y[t0 - T] /. sol[[1]]) - (y[t0] /. sol[[1]]))^2);

min = Minimize[{ (((x[t0 - T] /. sol[[1]]) - (x[t0] /. sol[[1]]))^2 +
     ((y[t0 - T] /. sol[[1]]) - (y[t0] /. sol[[1]]))^2), 5 < T < 15}, T]
tMin = t0 - T /. min[[2]];
distance[ T /. min[[2]]]
 T /. min[[2]]

Manipulate[Show[
  ParametricPlot[Evaluate[{x[t], y[t]} /. sol], {t, 0, 100}, PlotRange → {-0.6, 0.6}],
  Graphics[
   {PointSize[Large], Green, Point[{x[t0] /. sol[[1]], y[t0] /. sol[[1]]}]}],
  Graphics[{PointSize[Large], Pink, Point[{xStar, yStar}]}],
  Graphics[
   {PointSize[Large], Red, Point[{x[tMin] /. sol[[1]], y[tMin] /. sol[[1]]}]}],
  Graphics[{PointSize[Large], Black,
    Point[{x[t1] /. sol[[1]], y[t1] /. sol[[1]]}]}],
  Graphics[Text[StringForm["``", t1], {0, 0}]]
 ],
 {t1, 0, tMax}
]
```

Out[1472]= $\left\{1.01863 \times 10^{-8}, \{T \to 9.63421\}\right\}$

Out[1474]= 1.01863×10^{-8}

Out[1475]= 9.63421

Out[1476]=



In[421]:= **NumberForm[0.00110473, 16]**

Out[421]//NumberForm=

0.0011047251580382 63

In[410]:= **NumberForm[0.000435907, 16]**

Out[410]//NumberForm=

0.0004359074464754355

In[422]:= **NumberForm[0.000435907, 16]**

Out[422]//NumberForm=

0.0004359074464754355

In[319]:= **distance[t /. min[[2]]]**

Out[319]= 0.0489753