In[1]:=
```
SetDirectory["/Users/roth/Documents/Arnd/Circuit Reconstruction/Maxime"]
```

Out[1]=
```
/Users/roth/Documents/Arnd/Circuit Reconstruction/Maxime
```

Original connectivity

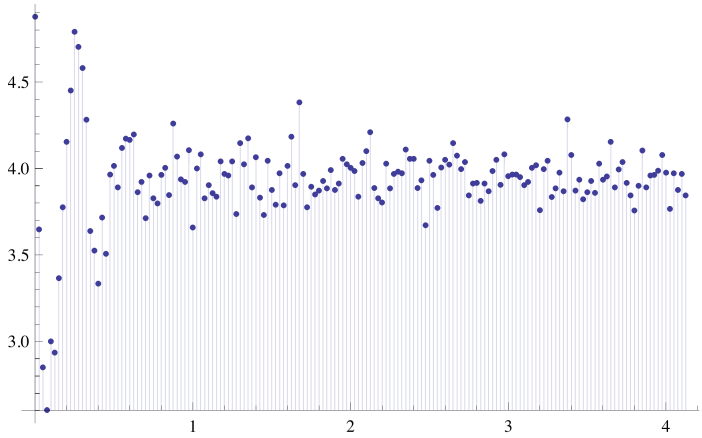
In[2]:=
```
dataBefore = ToExpression[Import["before.txt"]];
```

In[3]:=
```
mytimes = Range[0., 4.95, 0.025];
```

In[4]:=
```
dataBefore = Drop[dataBefore, 33];
mytimes = Drop[mytimes, -33];
```

In[6]:=
```
dataPlotBefore =
 ListPlot[Transpose[{mytimes, dataBefore}], Filling → Axis, PlotRange → All]
```

Out[6]=



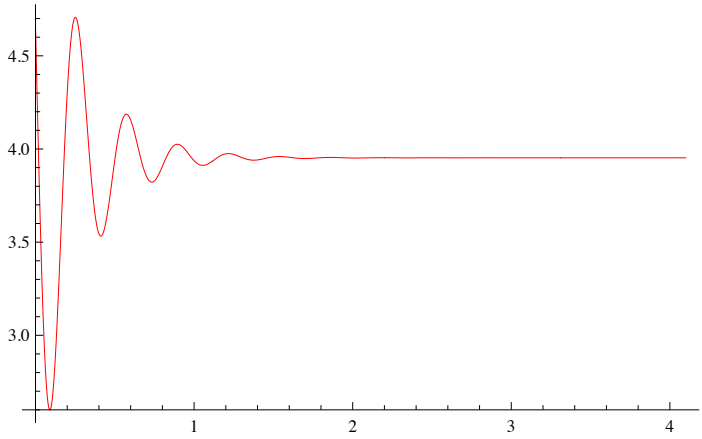
In[7]:=
```
fitResultBefore = FindFit[Transpose[{mytimes, dataBefore}],
  baseline + Exp[-gamma t] a Cos[omega1 t - alpha],
  {baseline, gamma, a, omega1, alpha}, t]
```

Out[7]=
```
{baseline → 3.95256, gamma → 3.63718,
 a → -1.91324, omega1 → 19.5401, alpha → 8.23668}
```

In[8]:=
```
rate[t_] := baseline + Exp[-gamma t] a Cos[omega1 t - alpha]
```

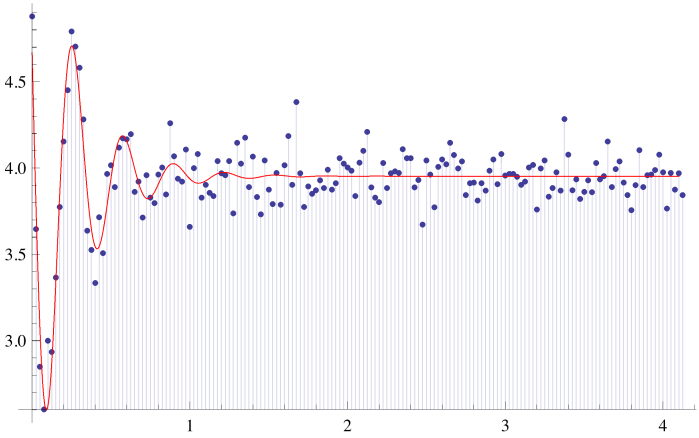
In[9]:=
```
fitPlotBefore = Plot[rate[t] /. fitResultBefore,
  {t, 0, 4.1}, PlotStyle → Hue[0.], PlotRange → All]
```

Out[9]=



In[10]:=
```
Show[dataPlotBefore, fitPlotBefore]
```

Out[10]=



Transformed connectivity

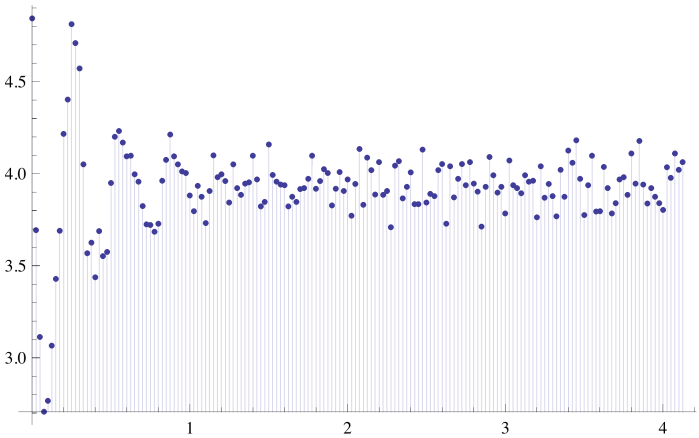
In[11]:=
```
dataAfter = ToExpression[Import["after.txt"]];
```

In[12]:=
```
mytimes = Range[0., 4.95, 0.025];
```

In[13]:=
```
dataAfter = Drop[dataAfter, 33];
mytimes = Drop[mytimes, -33];
```

In[15]:=
```
dataPlotAfter =
 ListPlot[Transpose[{mytimes, dataAfter}], Filling → Axis, PlotRange → All]
```

Out[15]=



In[16]:=
```
fitResultAfter = FindFit[Transpose[{mytimes, dataAfter}],
  baseline + Exp[-gamma t] a Cos[omega1 t - alpha],
  {baseline, gamma, a, omega1, alpha}, t]
```

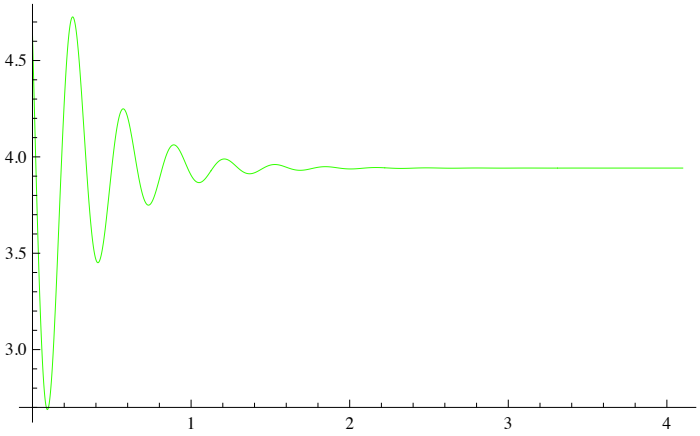
Out[16]=
```
{baseline → 3.94193, gamma → 2.93918,
 a → 1.66943, omega1 → 19.7136, alpha → 5.14087}
```

gamma is smaller -> the oscillation decays more slowly

In[17]:=
```
rate[t_] := baseline + Exp[-gamma t] a Cos[omega1 t - alpha]
```

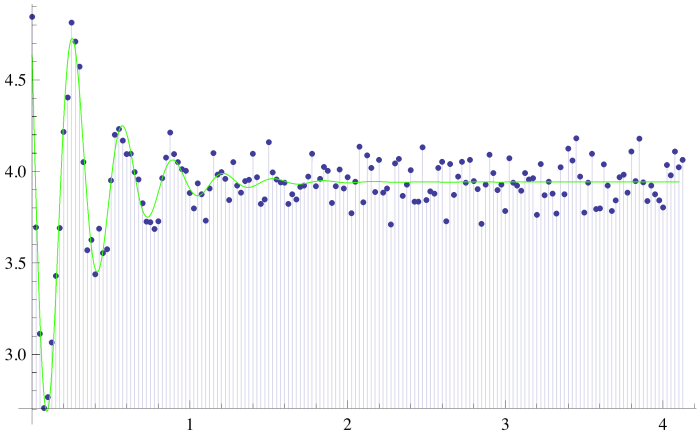
In[18]:=
```
fitPlotAfter = Plot[rate[t] /. fitResultAfter,
  {t, 0, 4.1}, PlotStyle → Hue[0.3], PlotRange → All]
```

Out[18]=



In[19]:=
```
Show[dataPlotAfter, fitPlotAfter]
```

Out[19]=



Comparison of the fits

In[20]:=
```
Show[fitPlotBefore, fitPlotAfter]
```

Out[20]=