

Vorlesung 9 14.06.2016

Vorl9-A3-12.cpp

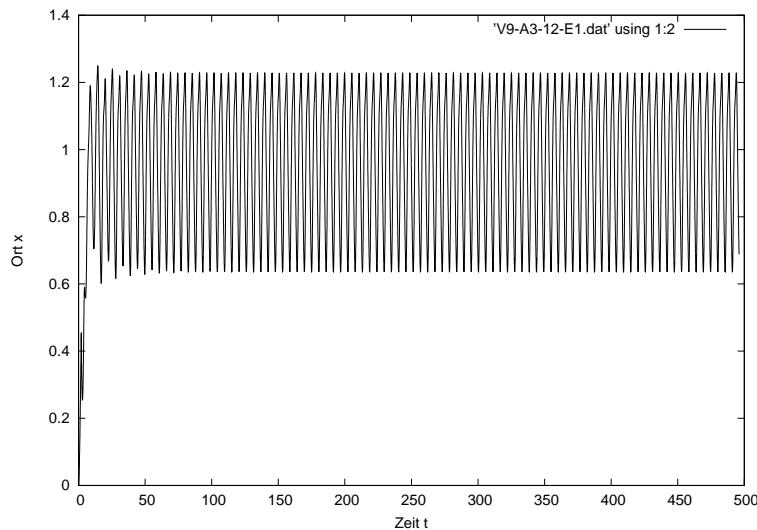
Numerische Lösung der Zeitverzögerungsdifferentialgleichung durch die 'Predictor-Corrector-Methode'

```
Shell session inside TeXmacs pid = 13978  
Shell] g++ -o Vorl9-A3-12 Vorl9-A3-12.cpp && ./Vorl9-A3-12 > V9-A3-12-E1.dat
```

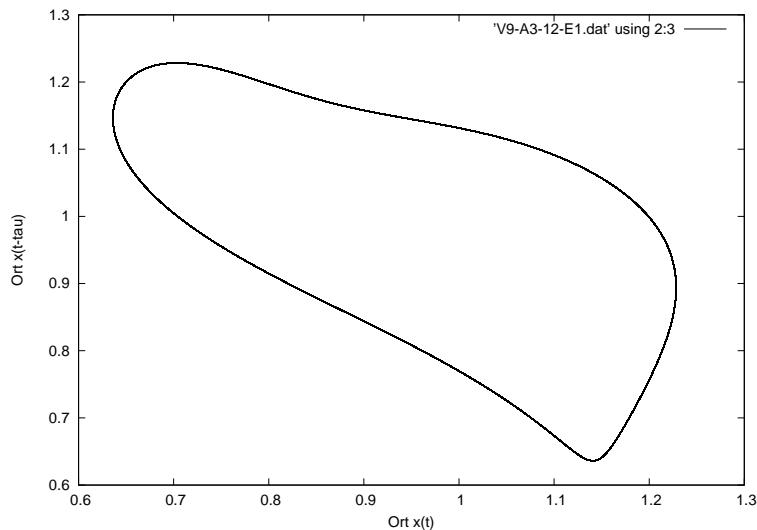
Shell]

Plot der Mackey Glass Gleichung Zeit vs. Ortskoordinate

```
This is a TeXmacs interface for GNUpplot.  
GNUpplot] set xlabel 'Zeit t'; set ylabel 'Ort x'; plot 'V9-A3-12-E1.dat' using  
1:2 with lines # n = 7
```



```
GNUpplot] set ylabel 'Ort x(t-tau)'; set xlabel 'Ort x(t)'; plot 'V9-A3-12-E1.dat'  
using 2:3 with lines # n = 7
```

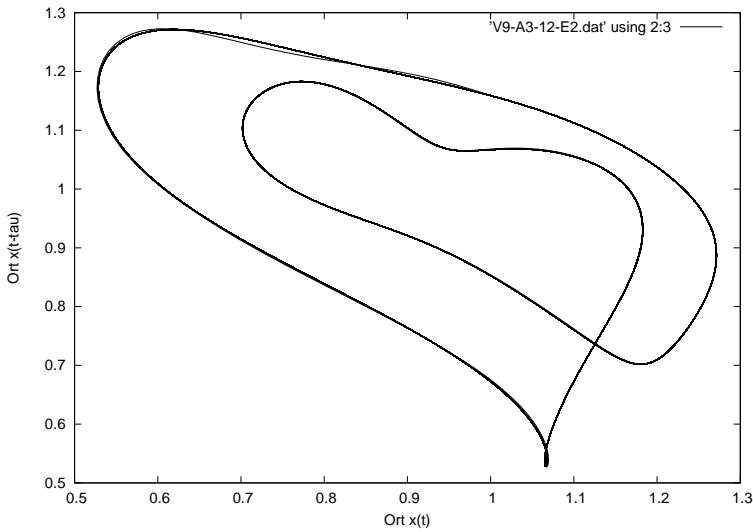


GNUpot]

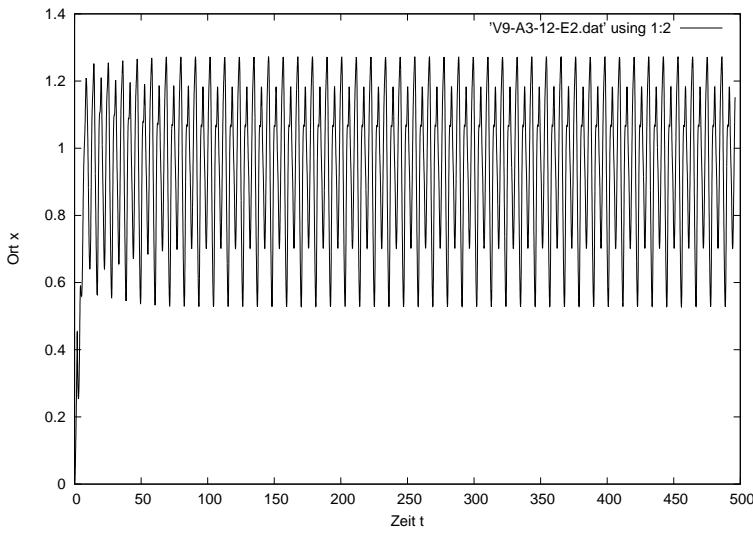
Nun Plot mit Veränderung des Paramters n.

Hier $n = 7.75$ dadurch Periodenverdoppelung

```
GNUpot] set ylabel 'Ort x(t-tau)'; set xlabel 'Ort x(t)'; plot 'V9-A3-12-E2.dat' using 2:3 with lines # n = 7.75
```



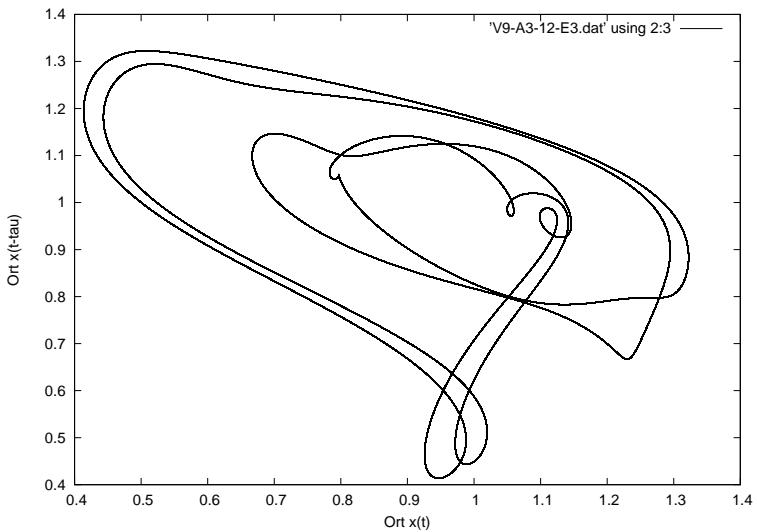
```
GNUpot] set xlabel 'Zeit t'; set ylabel 'Ort x'; plot 'V9-A3-12-E2.dat' using 1:2 with lines # n = 7.75
```



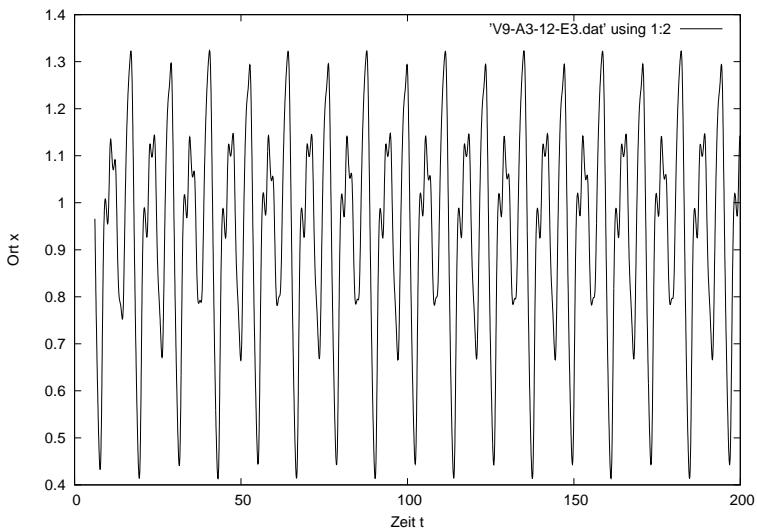
GNUplot]

Hier $n = 8.79$ dadurch Periodenvervierfachung

GNUplot] set ylabel 'Ort x(t-tau)'; set xlabel 'Ort x(t)'; plot 'V9-A3-12-E3.dat' using 2:3 with lines # n = 8.79



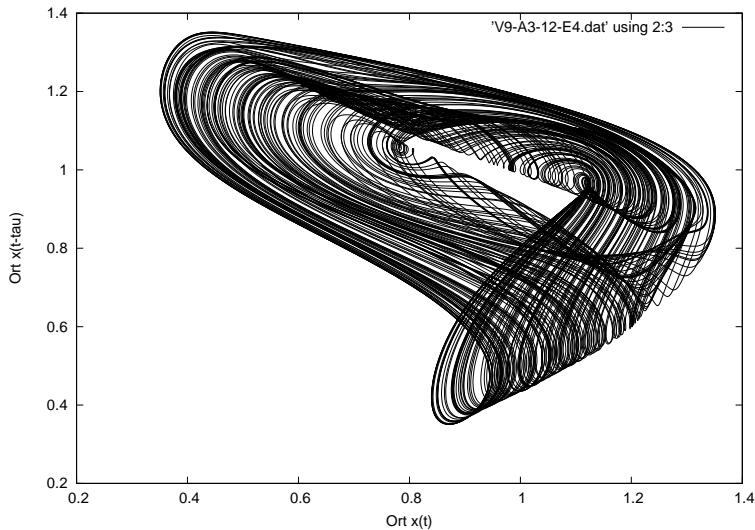
GNUplot] set xlabel 'Zeit t'; set ylabel 'Ort x'; set xrange [0:200]; plot 'V9-A3-12-E3.dat' using 1:2 with lines # n = 8.97



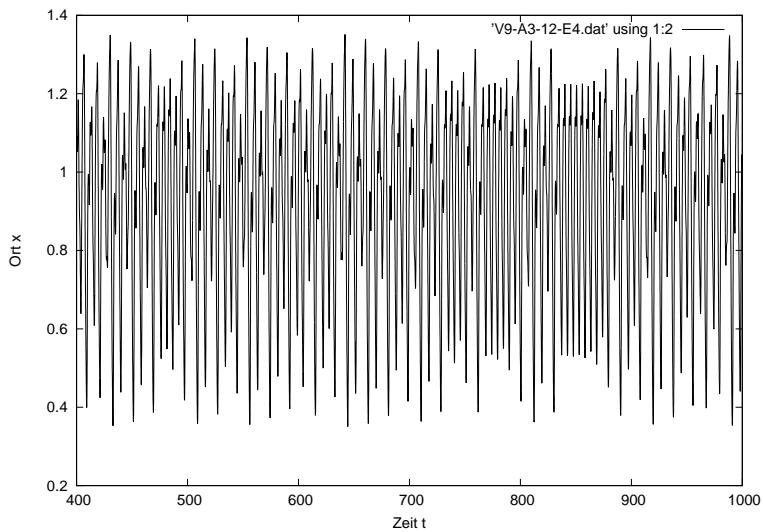
GNUplot]

Hier $n = 9.65$ dadurch Chaos

GNUplot] set ylabel 'Ort x(t-tau)'; set xlabel 'Ort x(t)'; plot 'V9-A3-12-E4.dat' using 2:3 with lines # n = 9.65



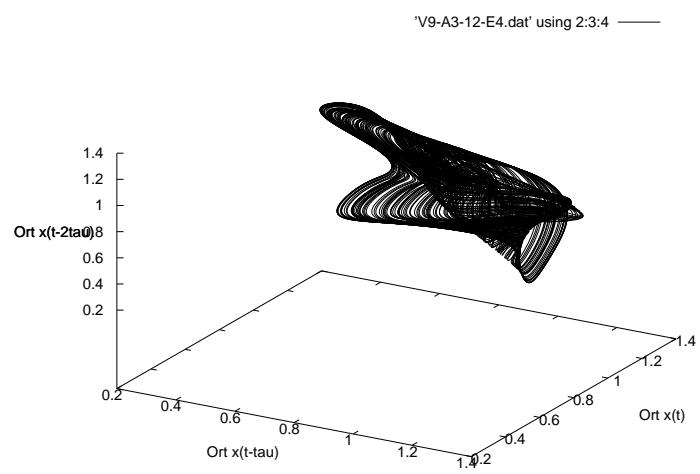
GNUplot] set xlabel 'Zeit t'; set ylabel 'Ort x'; set xrange [400:1000]; plot 'V9-A3-12-E4.dat' using 1:2 with lines # n = 9.65



GNUplot]

Hier $n = 9.65$ dadurch Chaos in 3D

GNUplot] set xlabel 'Ort x(t-tau)'; set ylabel 'Ort x(t)'; set zlabel 'Ort x(2tau)'; splot 'V9-A3-12-E4.dat' using 2:3:4 with lines # n = 9.65



GNUpplot]