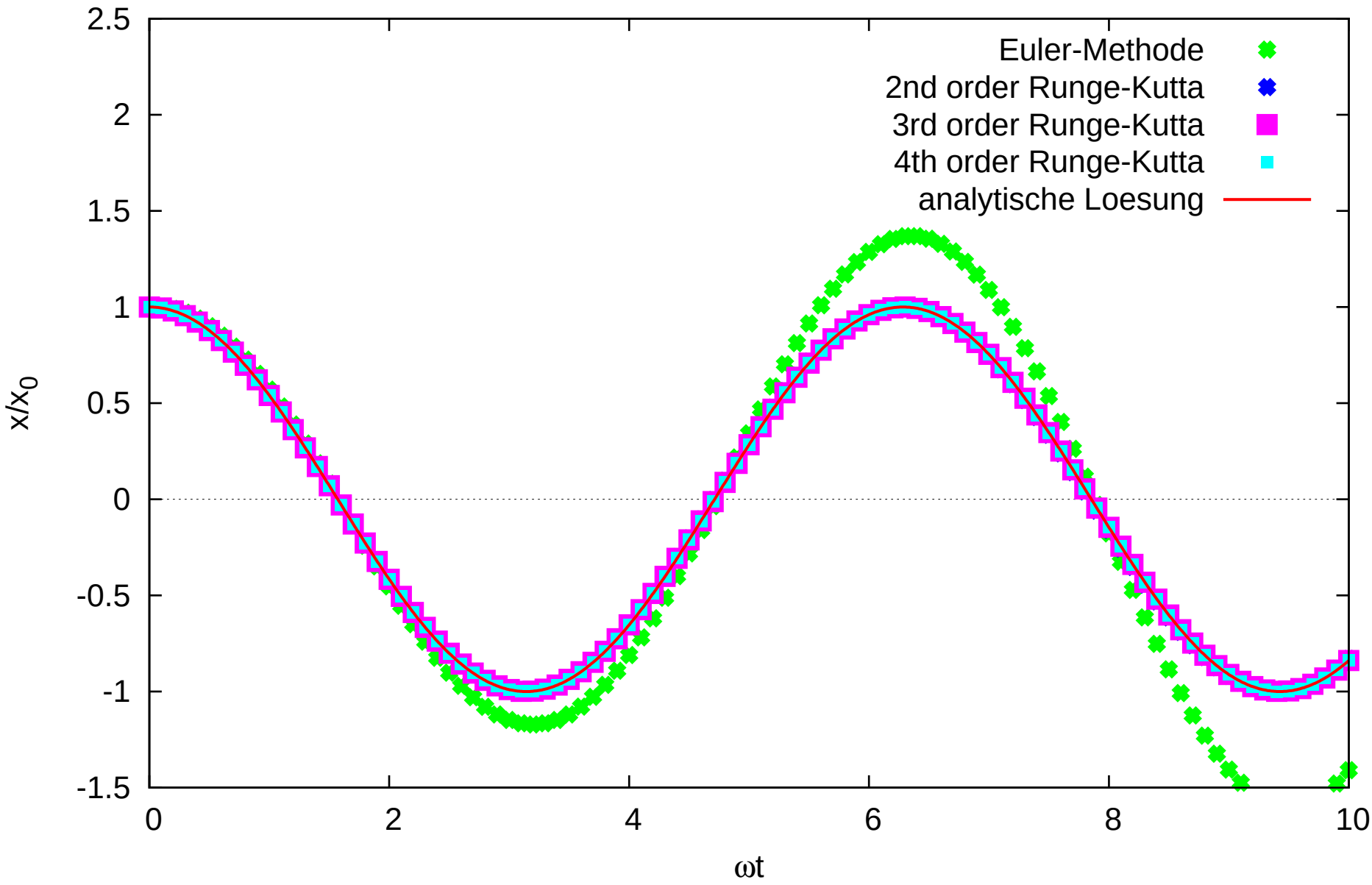
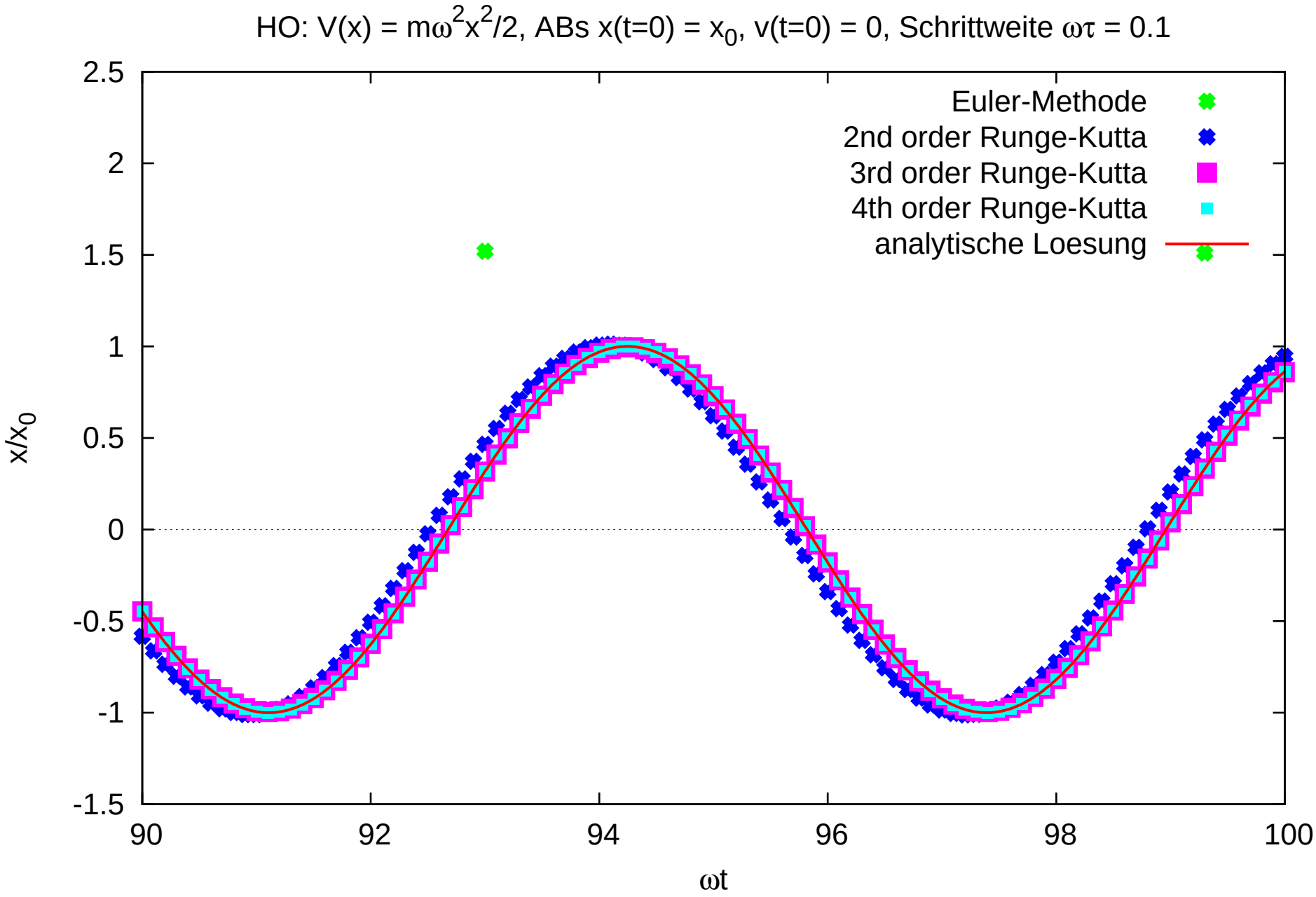
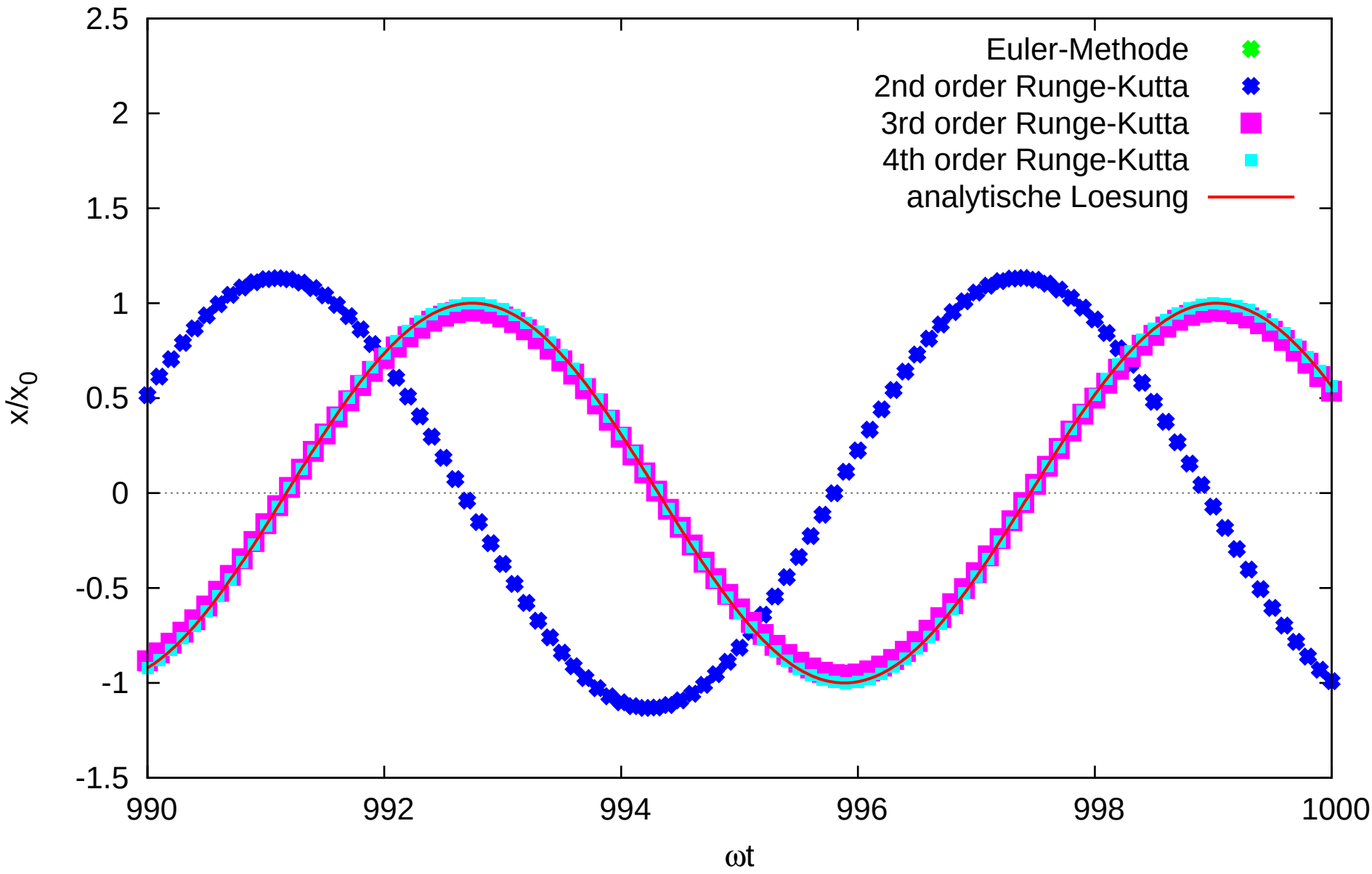
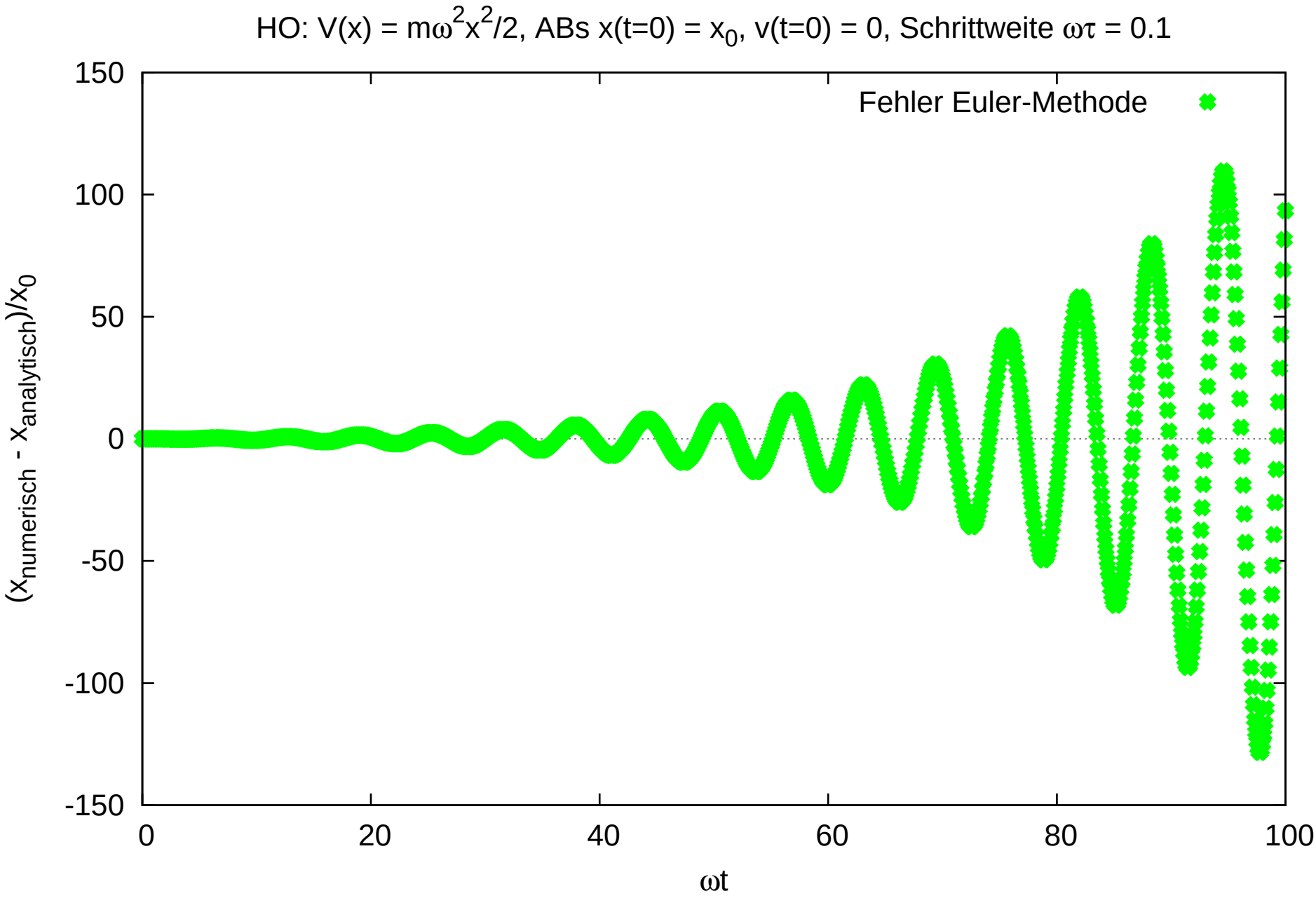
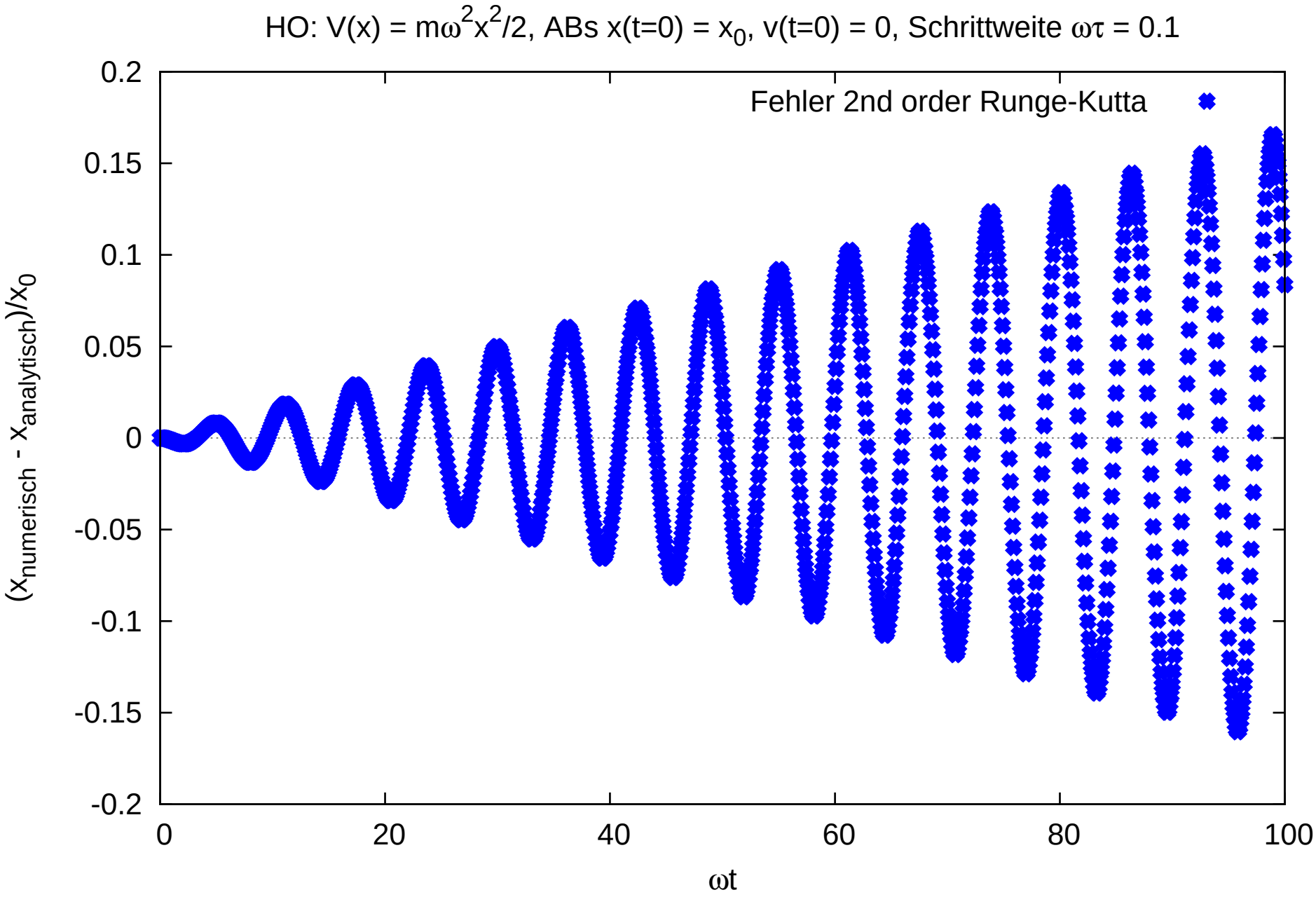
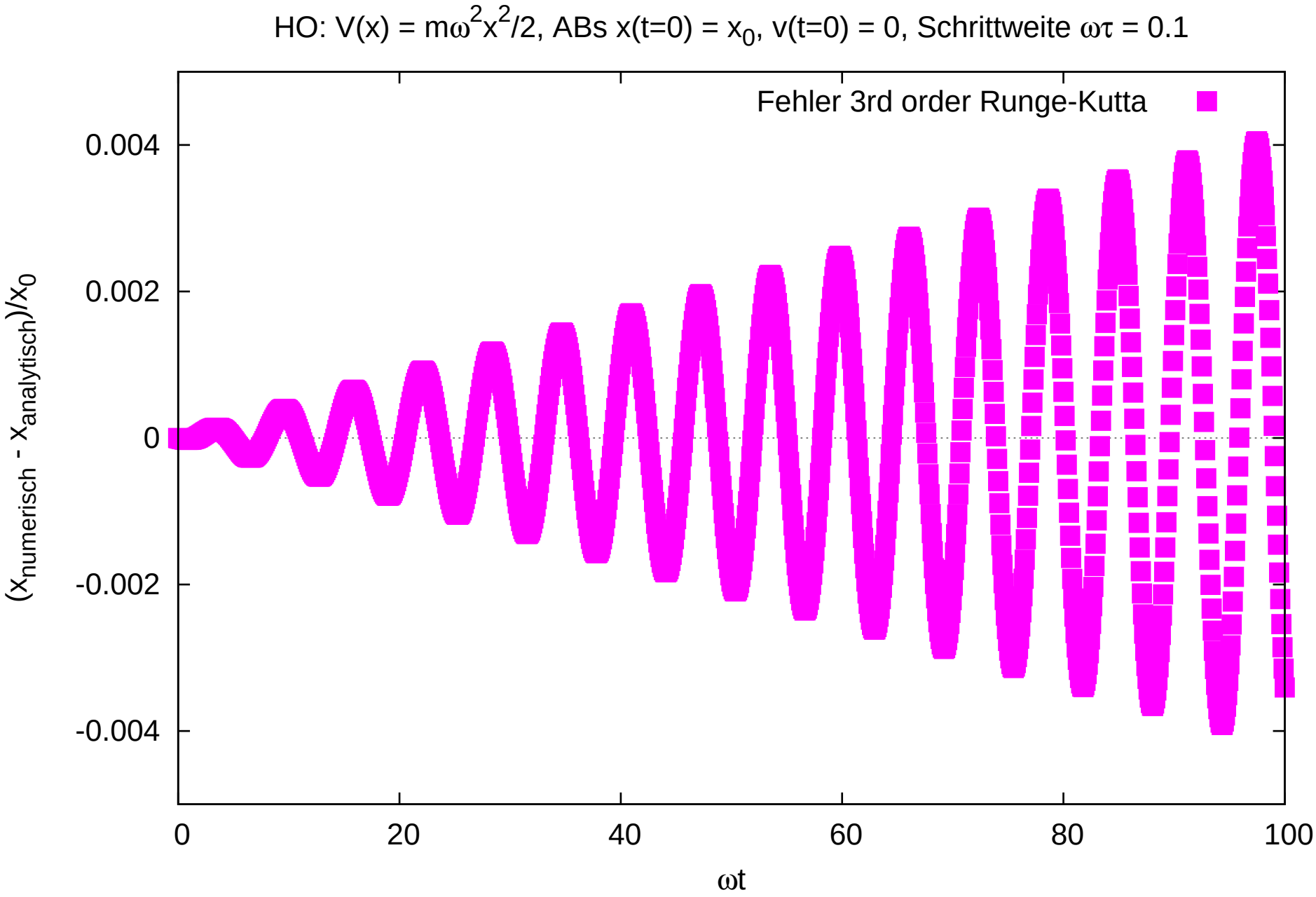

HO: V(x) = mω²x²/2, ABs x(t=0) = x0, v(t=0) = 0, Schrittweite ωτ = 0.1
Euler-Methode
2nd order Runge-Kutta
3rd order Runge-Kutta
4th order Runge-Kutta
analytische Loesung
x/x0
ωt
2.5
2
1.5
1
0.5
0
-0.5
-1
-1.5
0
2
4
6
8
10

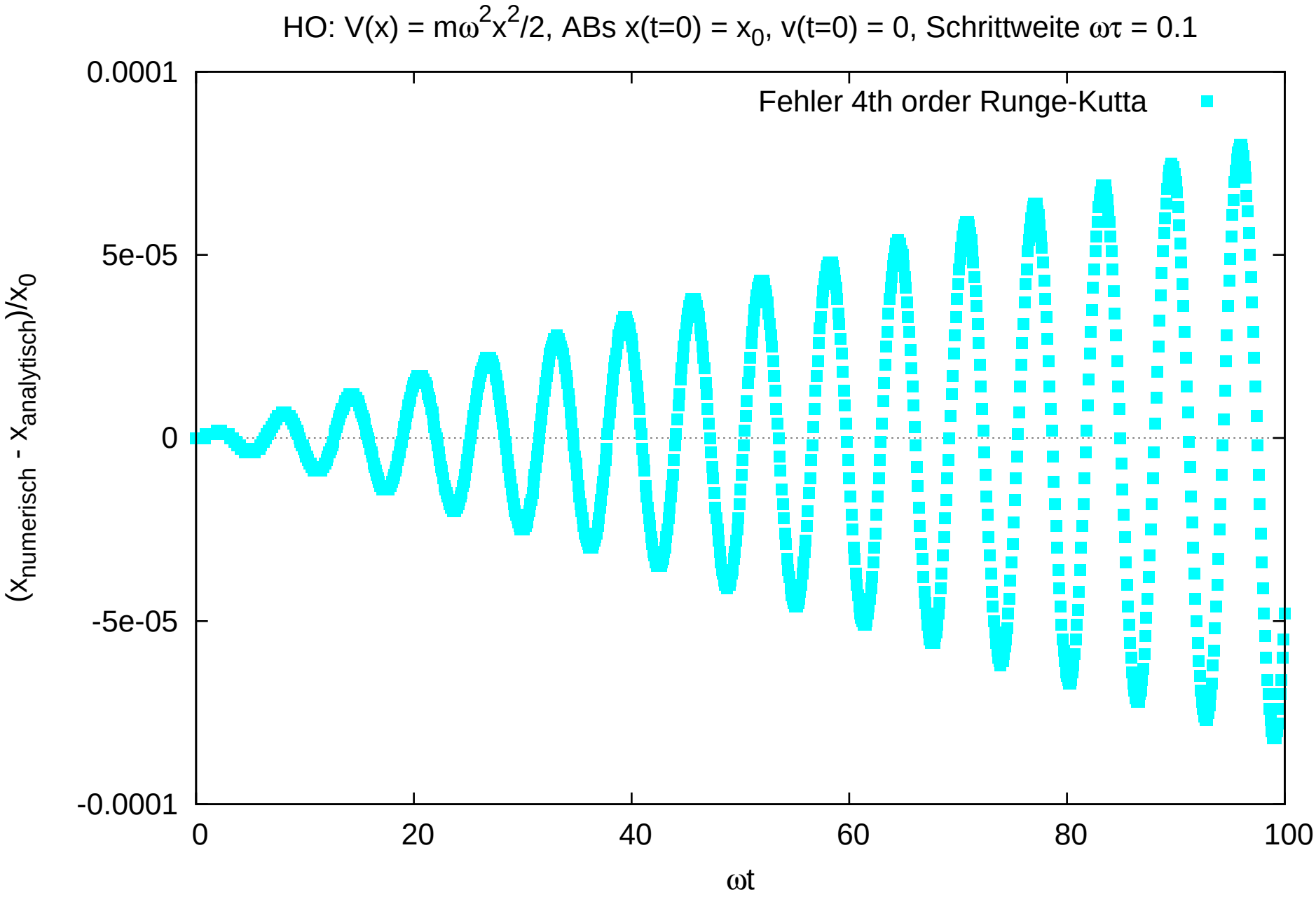

HO: V(x) = mω²x²/2, ABs x(t=0) = x0, v(t=0) = 0, Schrittweite ωτ = 0.1
Euler-Methode
2nd order Runge-Kutta
3rd order Runge-Kutta
4th order Runge-Kutta
analytische Loesung
x/x0
ωt
2.5
2
1.5
1
0.5
0
-0.5
-1
-1.5
90
92
94
96
98
100


HO: V(x) = mω²x²/2, ABs x(t=0) = x0, v(t=0) = 0, Schrittweite ωτ = 0.1
Euler-Methode
2nd order Runge-Kutta
3rd order Runge-Kutta
4th order Runge-Kutta
analytische Loesung
x/x0
ωt
2.5
2
1.5
1
0.5
0
-0.5
-1
-1.5
990
992
994
996
998
1000


HO: V(x) = mω²x²/2, ABs x(t=0) = x0, v(t=0) = 0, Schrittweite ωτ = 0.1
Fehler Euler-Methode
(xnumerisch - xanalytisch)/x0
ωt
150
100
50
0
-50
-100
-150
0
20
40
60
80
100


HO: V(x) = mω²x²/2, ABs x(t=0) = x0, v(t=0) = 0, Schrittweite ωτ = 0.1
Fehler 2nd order Runge-Kutta
(xnumerisch - xanalytisch)/x0
ωt
0.2
0.15
0.1
0.05
0
-0.05
-0.1
-0.15
-0.2
0
20
40
60
80
100


HO: V(x) = mω²x²/2, ABs x(t=0) = x0, v(t=0) = 0, Schrittweite ωτ = 0.1
Fehler 3rd order Runge-Kutta
(xnumerisch - xanalytisch)/x0
0.004
0.002
0
-0.002
-0.004
0
20
40
60
80
100
ωt


HO: V(x) = mω²x²/2, ABs x(t=0) = x0, v(t=0) = 0, Schrittweite ωτ = 0.1
Fehler 4th order Runge-Kutta
(xnumerisch - xanalytisch)/x0
0.0001
5e-05
0
-5e-05
-0.0001
0
20
40
60
80
100
ωt