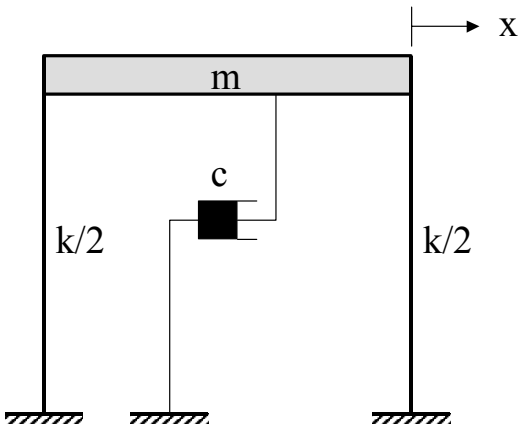
The response of the single-degree-of-freedom (SDOF) system (shown below) subject to the El Centro earthquake was solved using Newmark's Method for the Linear-Acceleration case.



System Properties

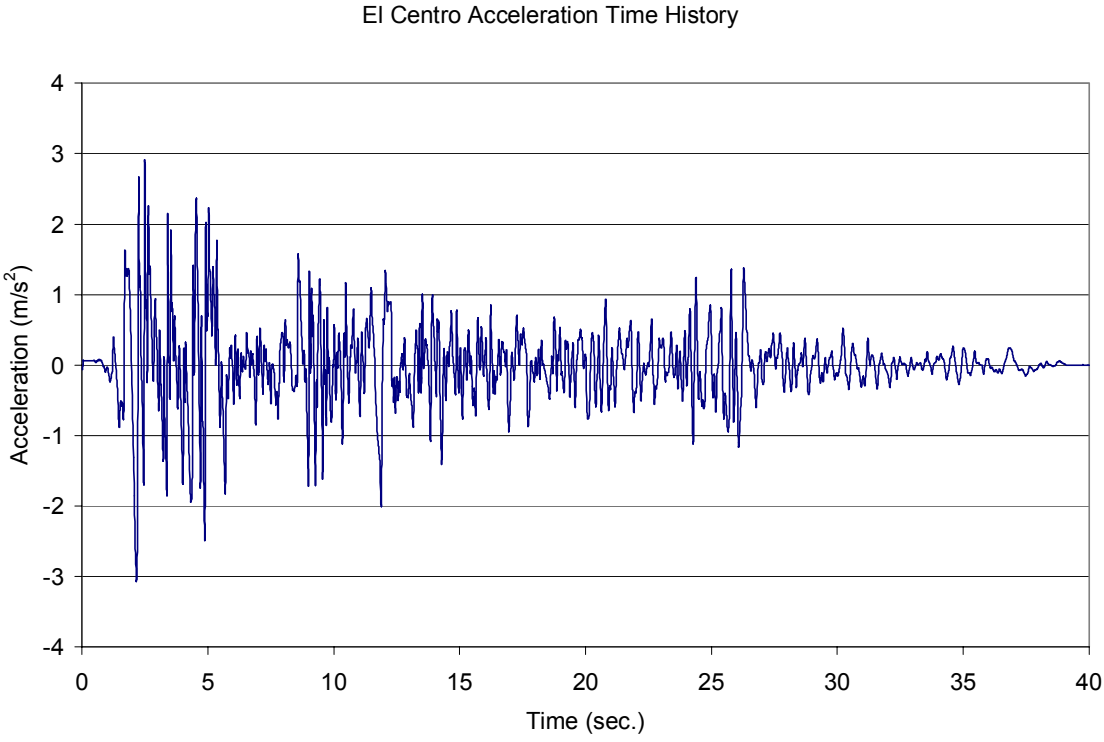
m =	1	kg
k =	411.887	N/m
c =	0.8118	N-s/m
Δt =	0.01	s
m^* =	1.010924	kg
ω_1 =	20.295	rad/s
f_1 =	3.23005	Hz
ζ_1 =	0.02	

Newmark Coefficients

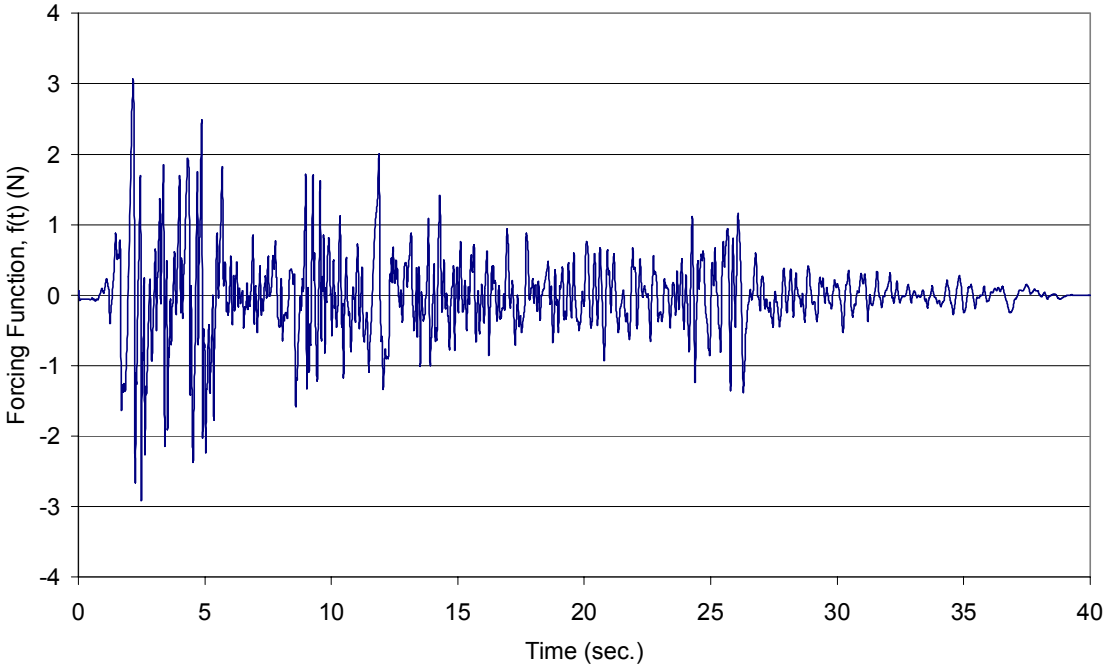
α =	0.5
β =	0.166667

Initial Conditions

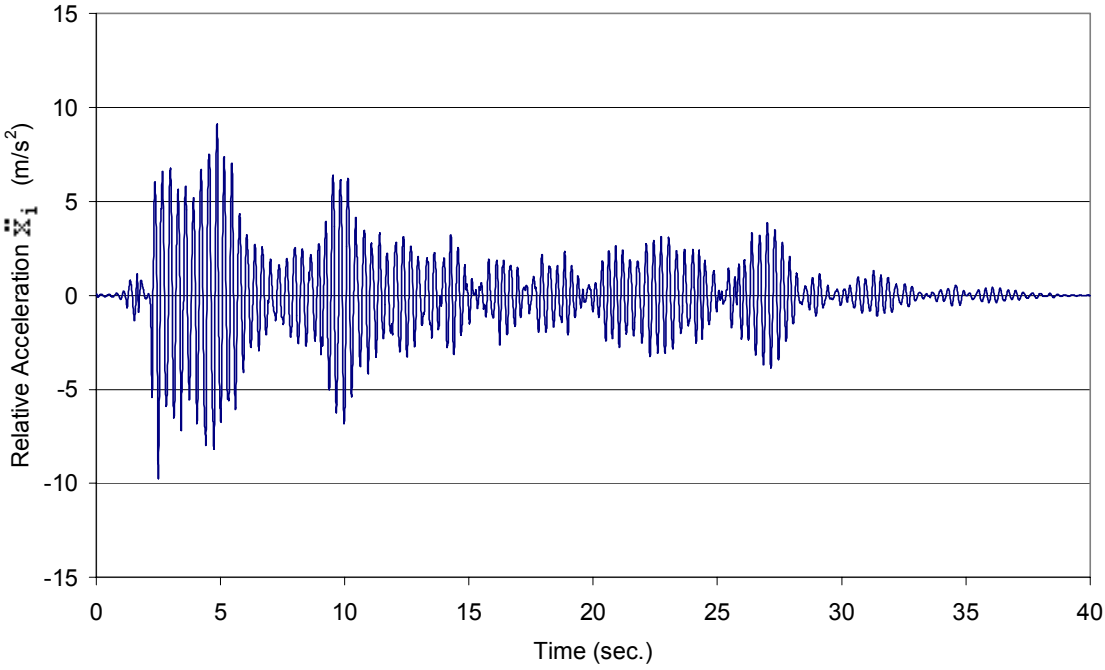
d_o =	0	m
v_o =	0	m



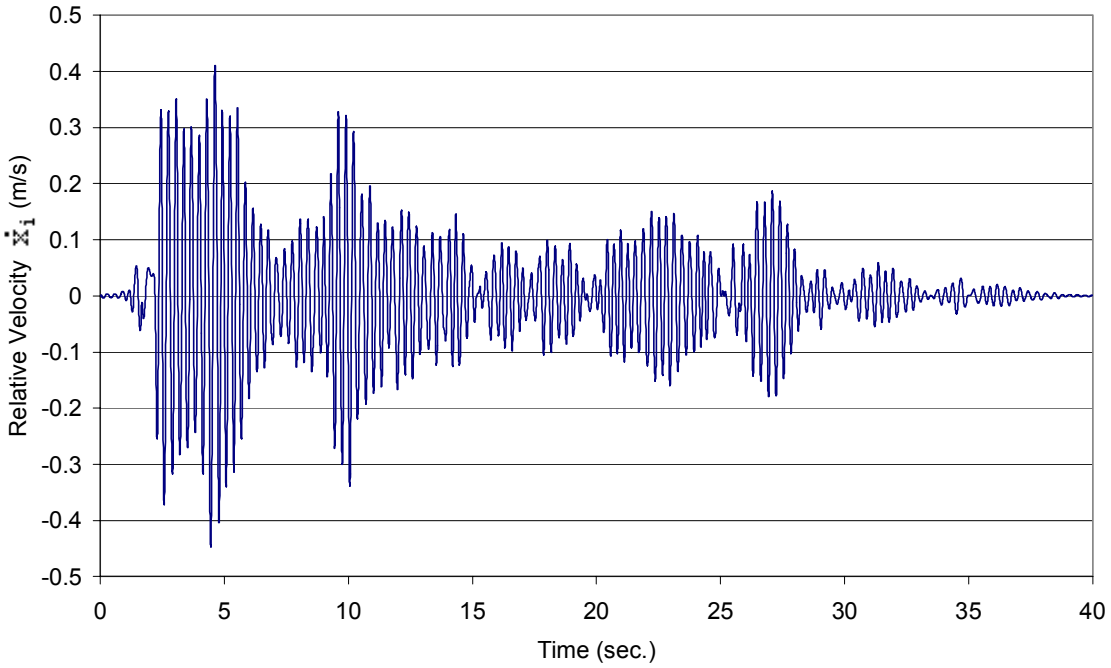
Forcing Function f(t) versus Time



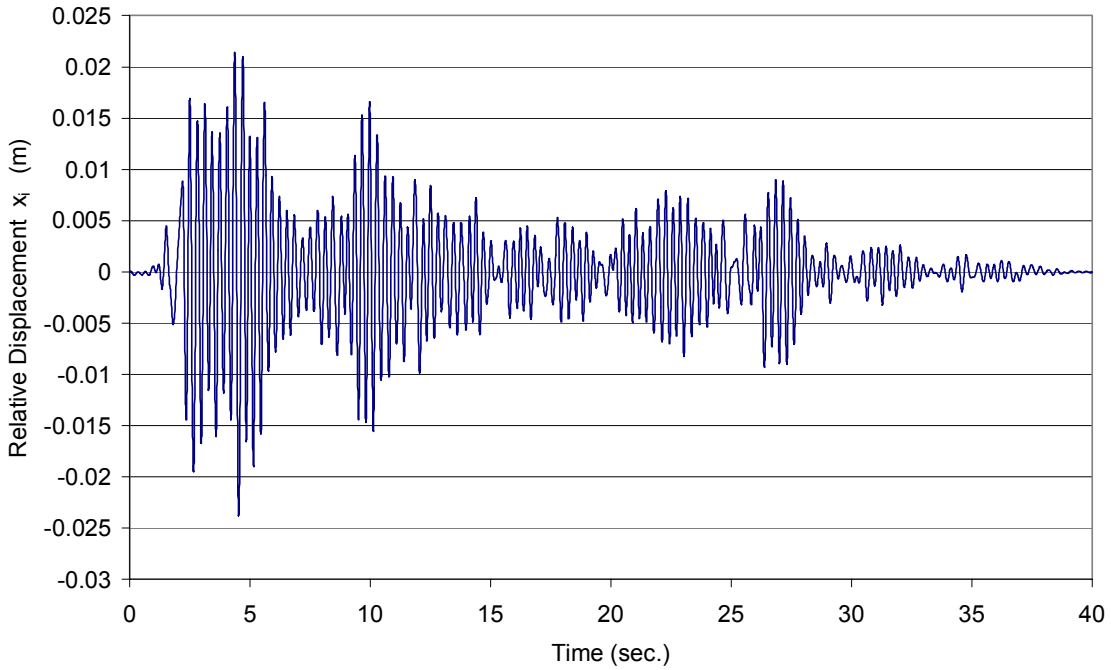
Relative Acceleration versus Time

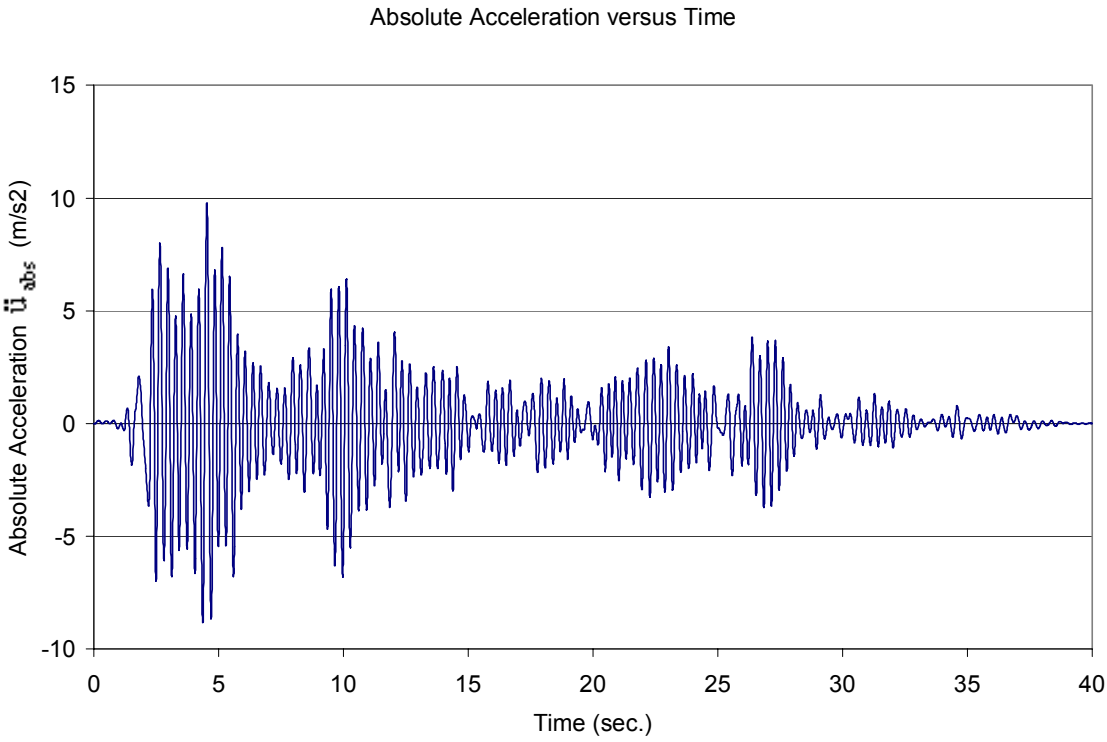


Relative Velocity versus Time



Relative Displacement versus Time




Absolute Acceleration versus Time
Absolute Acceleration $\ddot{u}_{abs}$ (m/s2)
15
10
5
0
-5
-10
0
5
10
15
20
25
30
35
40
Time (sec.)