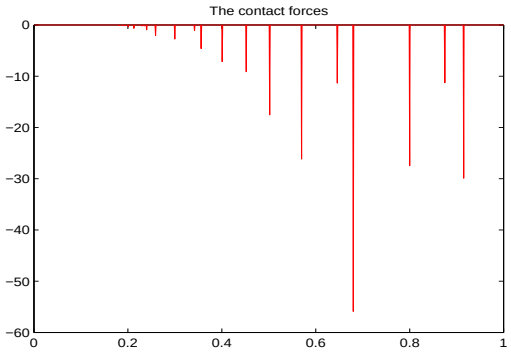
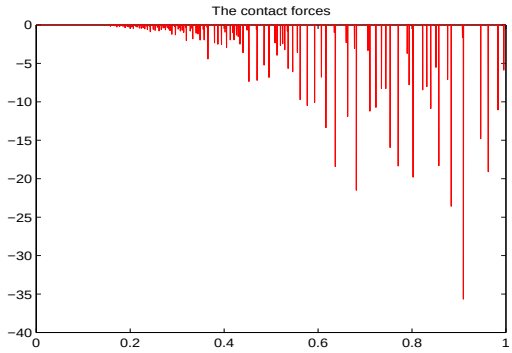
Figure 0.1: Contact Forces

(a) The first simulation



(b) The second simulation



Numerical Results for MEMS

- I assume that we use the same notation as we did in the paper whose title is Existence and Simulations of a Dynamic Thermoviscoelastic Rod/Beam System. We also assume that external forces $Q = f = 0$.

- Initial data

$u^0(y) = 0$	Initial deformation of a rod
$w^0(x) = (1-x)^3/100$	Initial displacement of a beam
$u_t^0(y) = w_t^0(x) = 0$	Initial velocities
$\theta^0(x) = e^{-\kappa(y-1)} - e^{\kappa(y-1)^2}$	Initial temperature

- The first simulation for the **dimensionless system**

beam	rod	time step size	their length	viscosity
$h_x = 0.01$	$h_y = 0.001$	$h_t = 0.001$	$L_y = L_x = 1$	$\nu_b = \nu_d = 0$

α	c_{th}	κ_{th}	h_d	c_b^2	The final time
1	1	1/20	1/20	4	$T = 1$

- The second simulation the **dimensionless system**

beam	rod	time step size	their length	viscosity
$h_x = 0.01$	$h_y = 0.001$	$h_t = 0.0004$	$L_y = L_x = 1$	$\nu_b = \nu_d = 0$

α	c_{th}	κ_{th}	h_d	c_b^2	The final time
1	1	1/4	1/4	100	$T = 1$

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