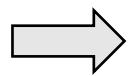
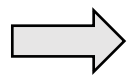


Simulation input



Pre-processing



Simulation loop



Simulation output

Geometry & connection

Physical parameters

Numerical parameters

Boundary conditions

Initial conditions

Loading steps

Build structure struct



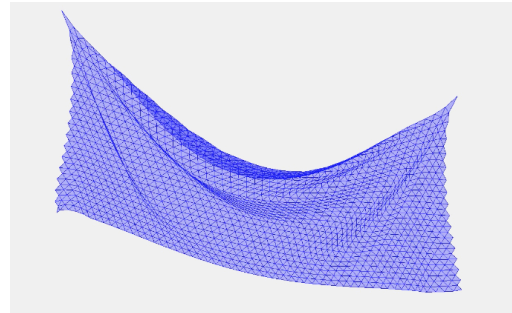
Build element struct



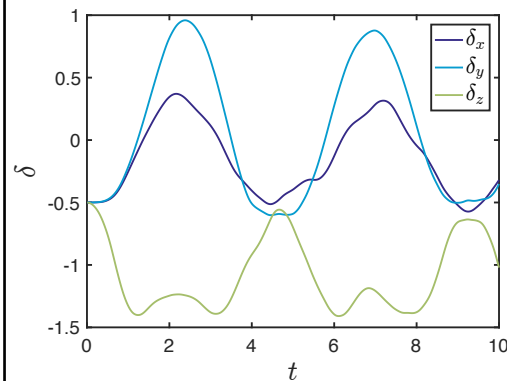
Build constraint map

**Algorithm 1** Simulation loop

```
while  $t_k \leq T$  do  
   $t_{k+1} = t_k + dt$   
  solved  $\leftarrow 0$   
  while solved == 0 do  
     $n \leftarrow 0$   
    Guess  $\mathbf{q}_n(t_{k+1}) = \mathbf{q}(t_k) + dt \dot{\mathbf{q}}(t_k)$   
    error  $\leftarrow 10 \times tol$   
    while error > tol do  
      Compute  $\mathcal{E}_n$  and  $\mathbb{J}_n$   
       $\mathbf{q}_{n+1}(t_{k+1}) = \mathbf{q}_n(t_{k+1}) - \mathbb{J}_n \backslash \mathcal{E}_n$   
       $n \leftarrow n + 1$   
       $tol = ||\mathcal{E}_n||$   
    end while  
  end while  
end while
```



Dynamic rendering



Parameter plot