Goal:

To design a gauss gun with the optimal configuration for r, a, s and n given L and W.

Procedure:

From Toward Tissue Penetration by MRI-powered Millirobots Using a Self-Assembled Gauss Gun paper, there are four parameters that can be optimized to get the maximum energy from a gauss gun they are: Radius of the sphere (r), Inter component spacing (a), intra component spacing (s) and number of components (n).

In this paper we are showing the optimal values for r, a, s and n given the length of the Gaussian gun (L) and the width (w). According to the equation (1), graphs (will be provided) and the trials (I am working on), we need to maximize the radius to maximize the energy, so the radius value should equal to w/2, r = W/2 (2).

From the 1000 trials (still working on them) for different values of L, r, a, n and s I found that to get maximum value for PE, s should be equal to (0.98 – 0.99) of a.

Assuming that the distance between the second sphere of the trigger component and the first sphere of the barrel is 0.5 a then the total length will be L = 4r + 1.5a + n[4r+s+a]+4r+s (3).

From (3) n= (4), now using (2) n= (5).

Assuming s = 0.98a from the graphs (will be provided) as shown already then n= (6).

I will be working to find the relation between s and r and then we can use (5) to find the equation for n.