Beam center study for LANL 2020 TB

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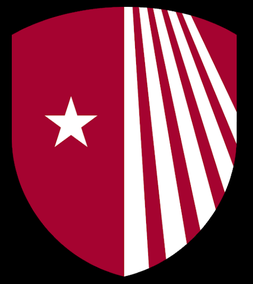
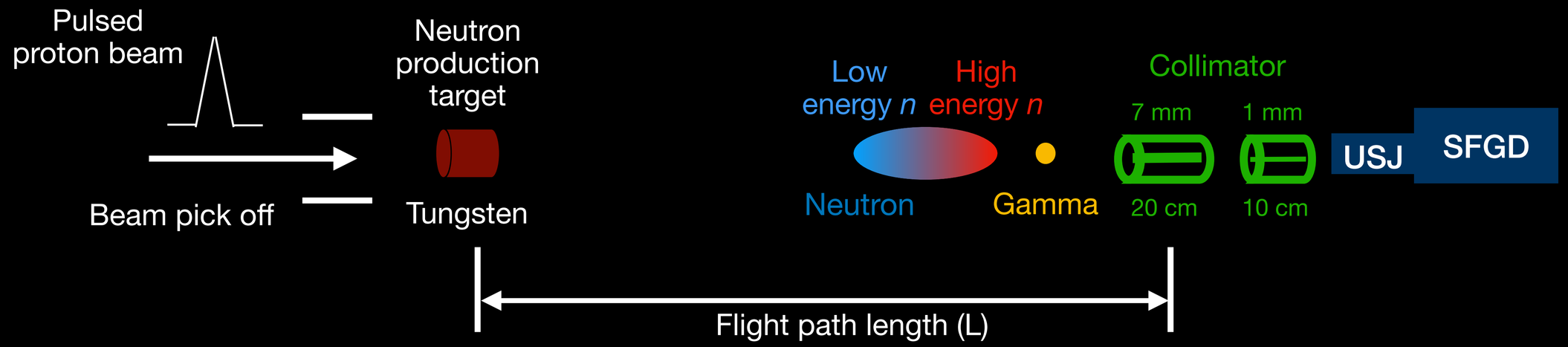
Neutron beam test analysis meeting

December, 9th 2020



Stony Brook University

Beamline setup

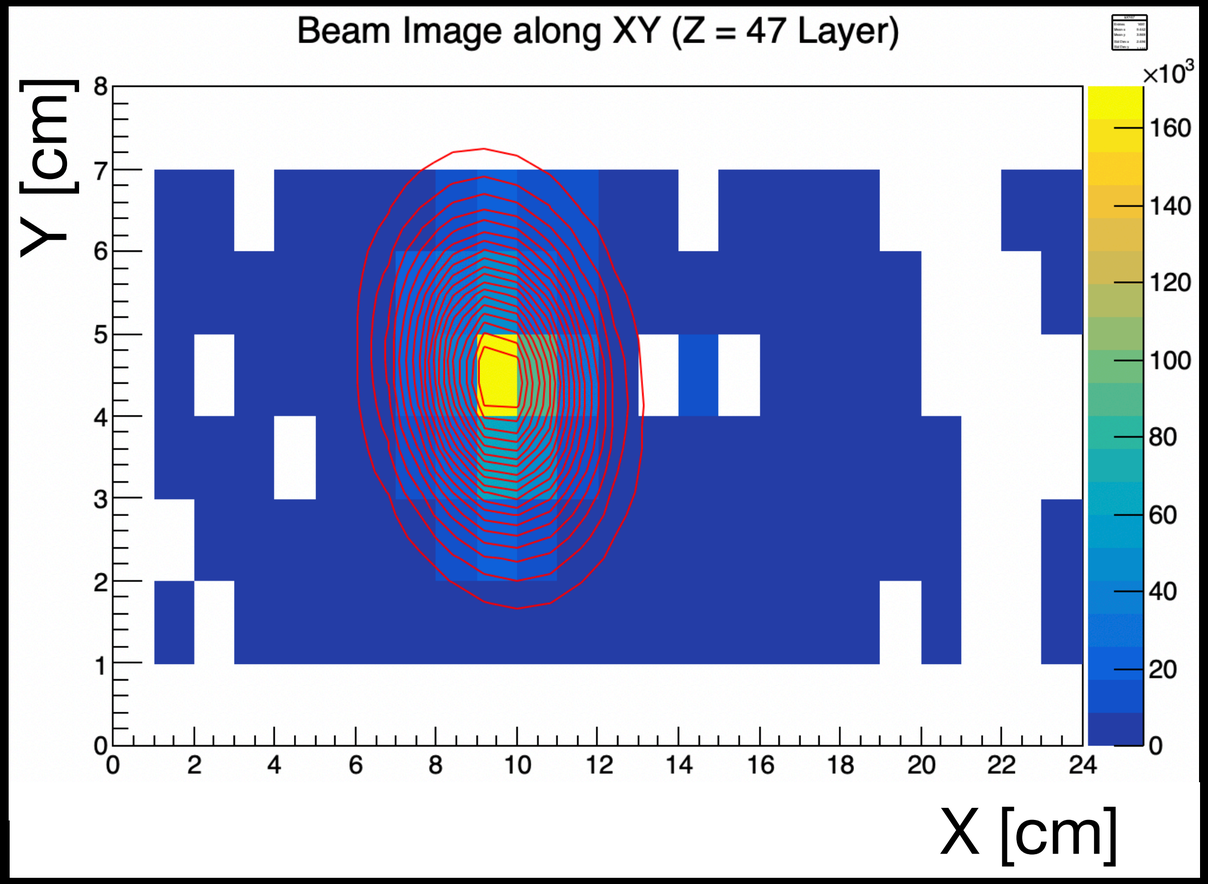


We tested three different configurations: one 1mm configuration, 2 x 1 mm and 4 x 1mm

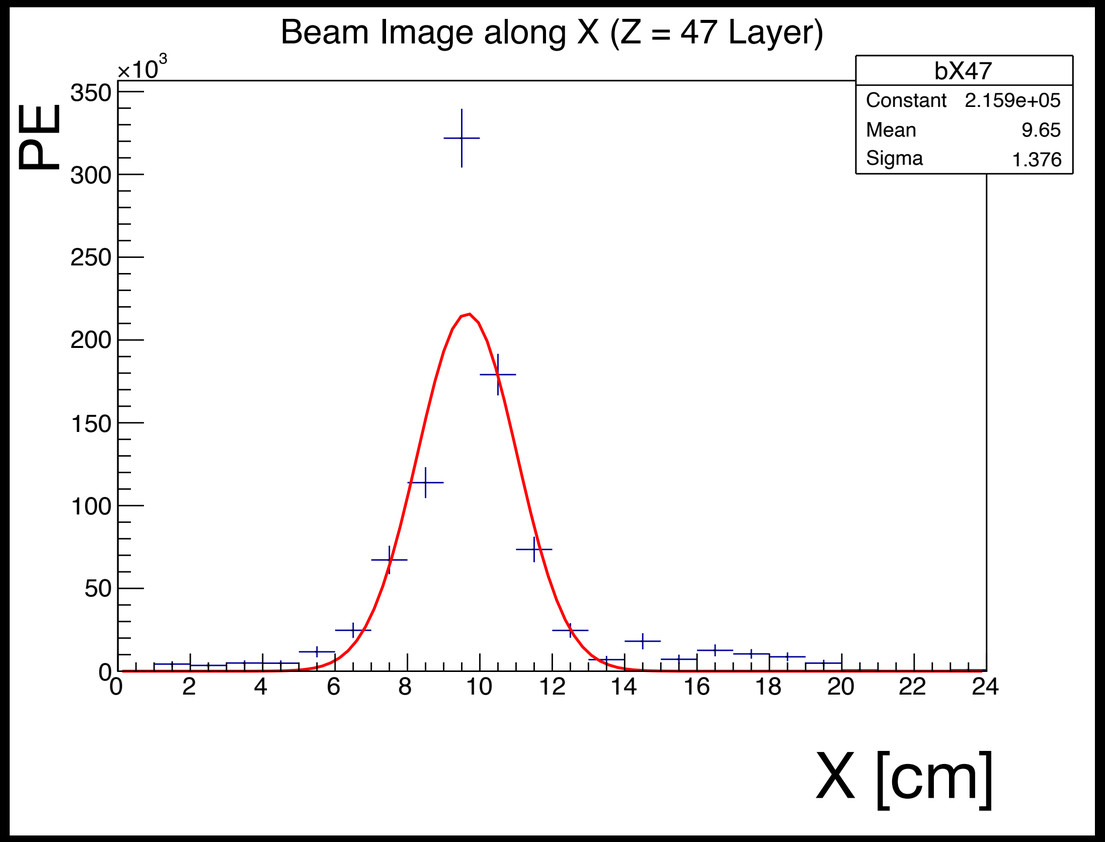
CAVEAT: For this analysis we didn't use US-JP data

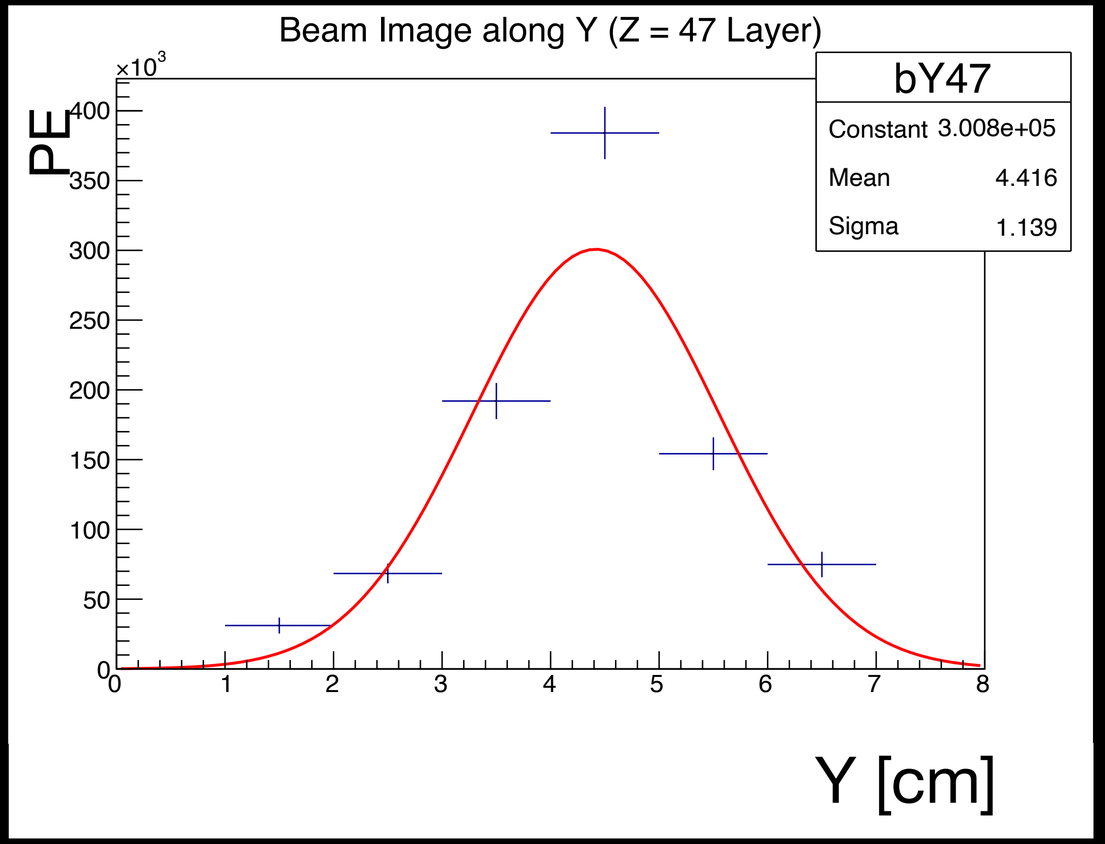
One 1 mm collimator

First layer voxels distribution for SFGD



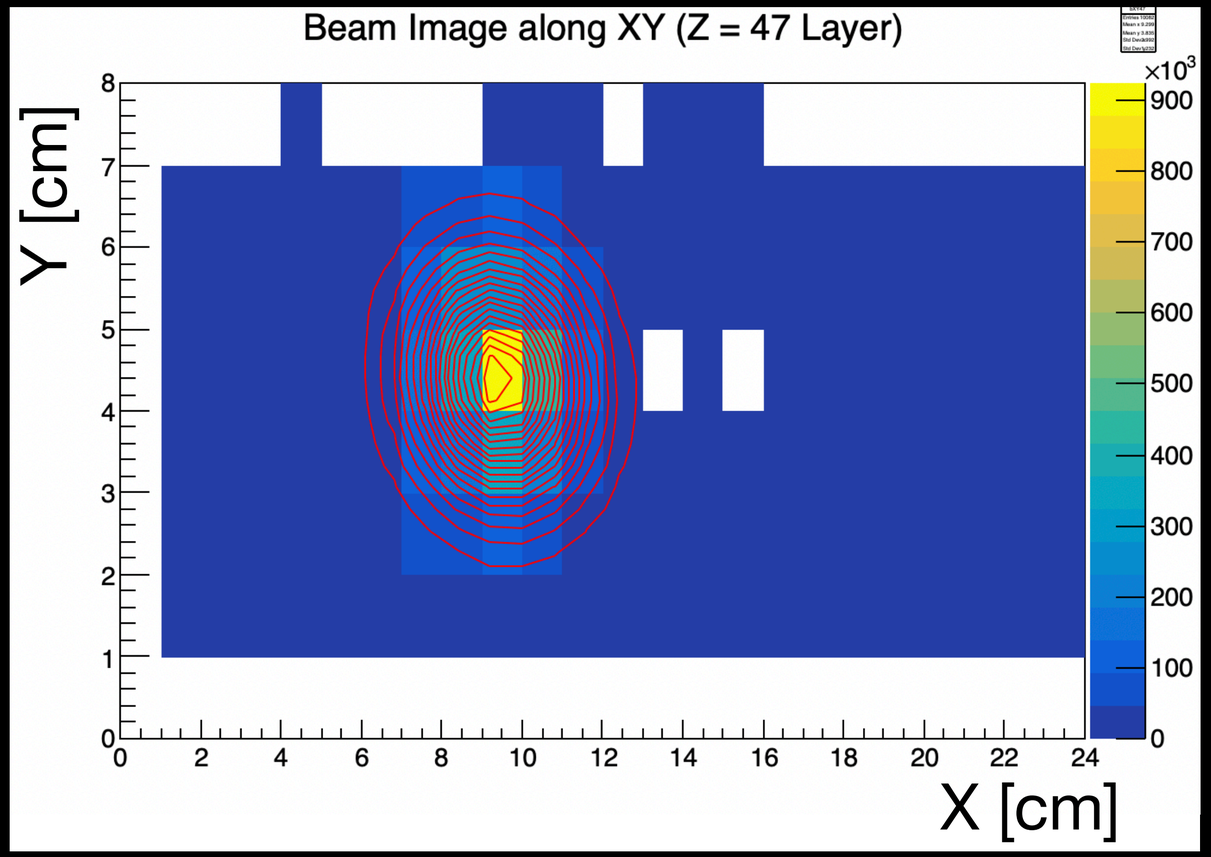
One 1 mm collimator





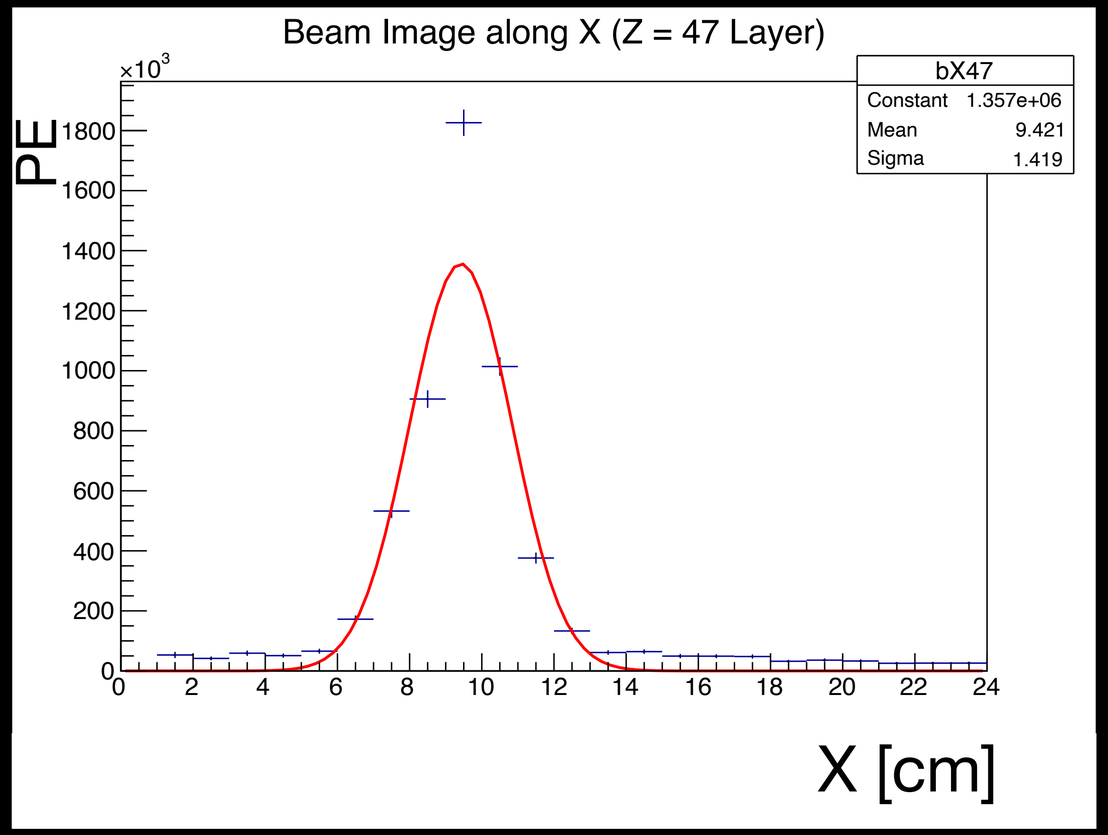
Two 1 mm collimators

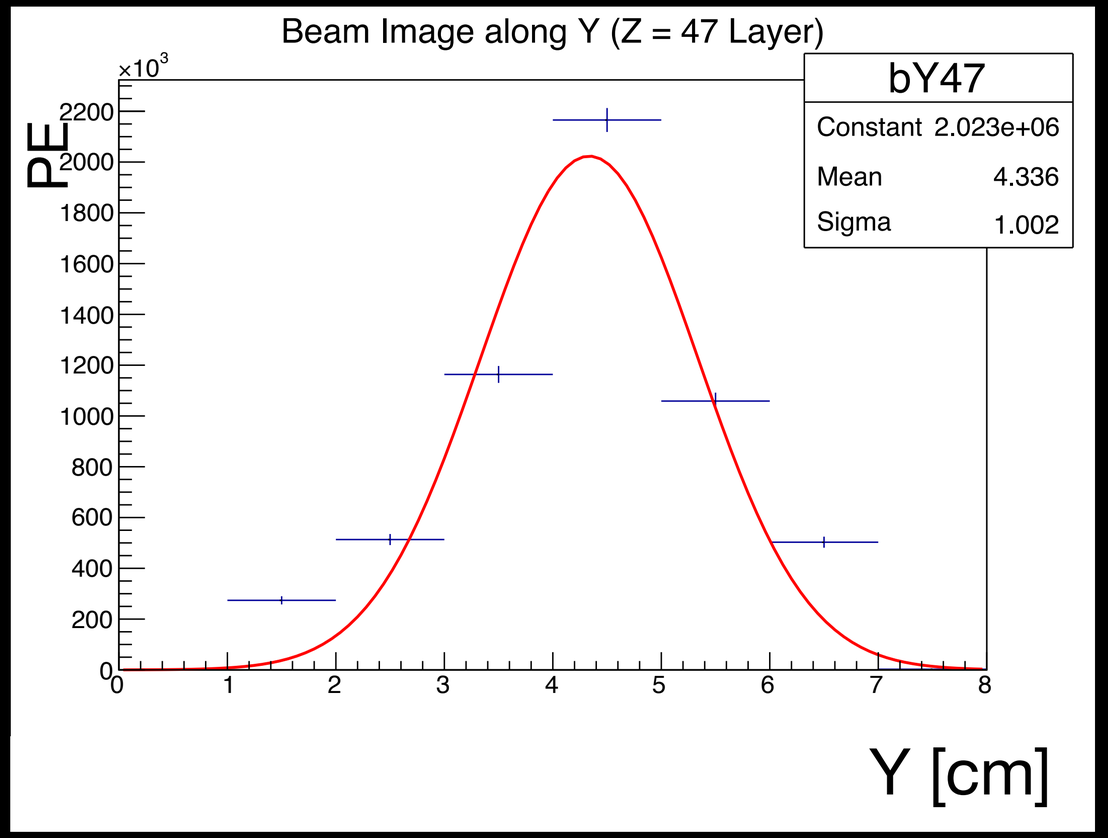
First layer voxels distribution for SFGD



Having two collimators do not help

Two 1 mm collimators

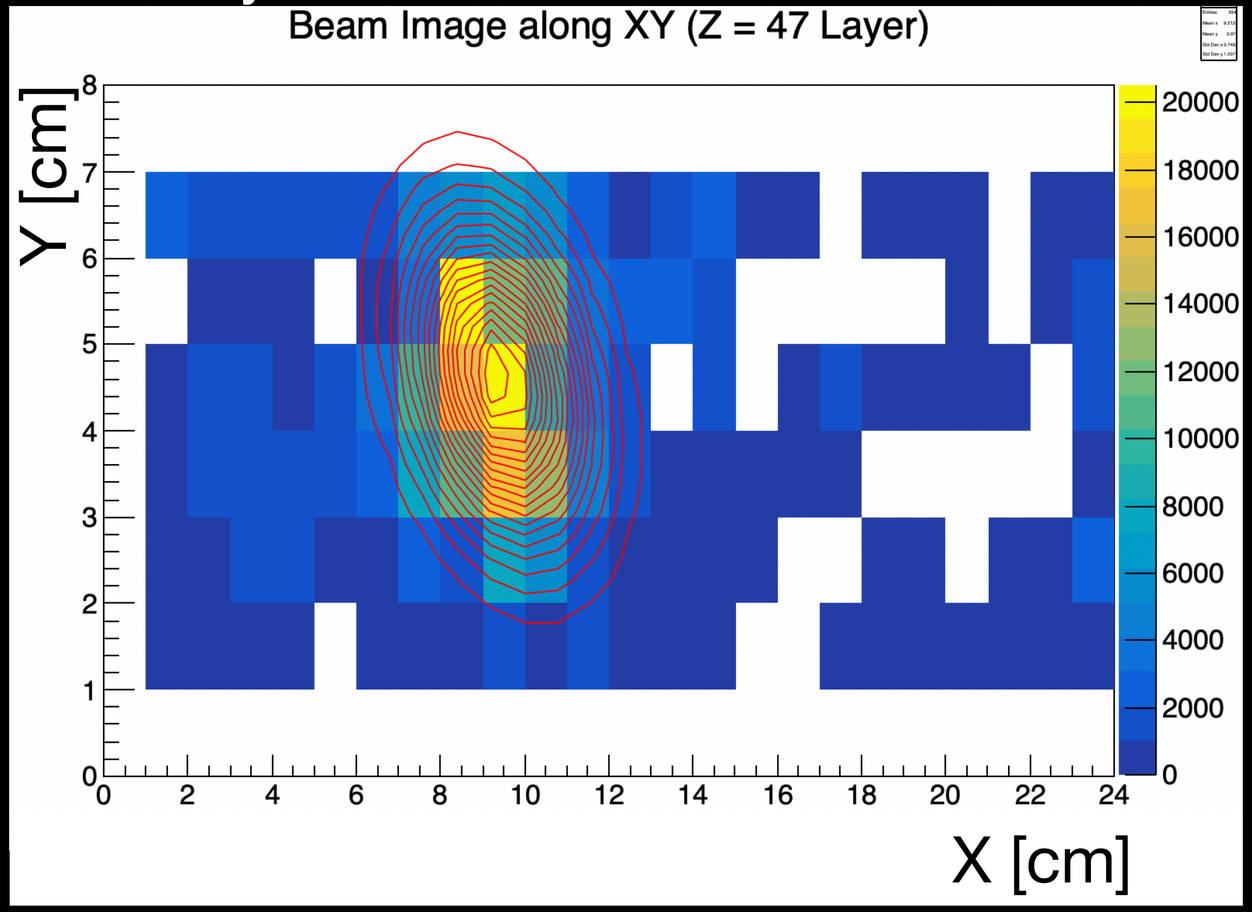




Having two collimators do not help

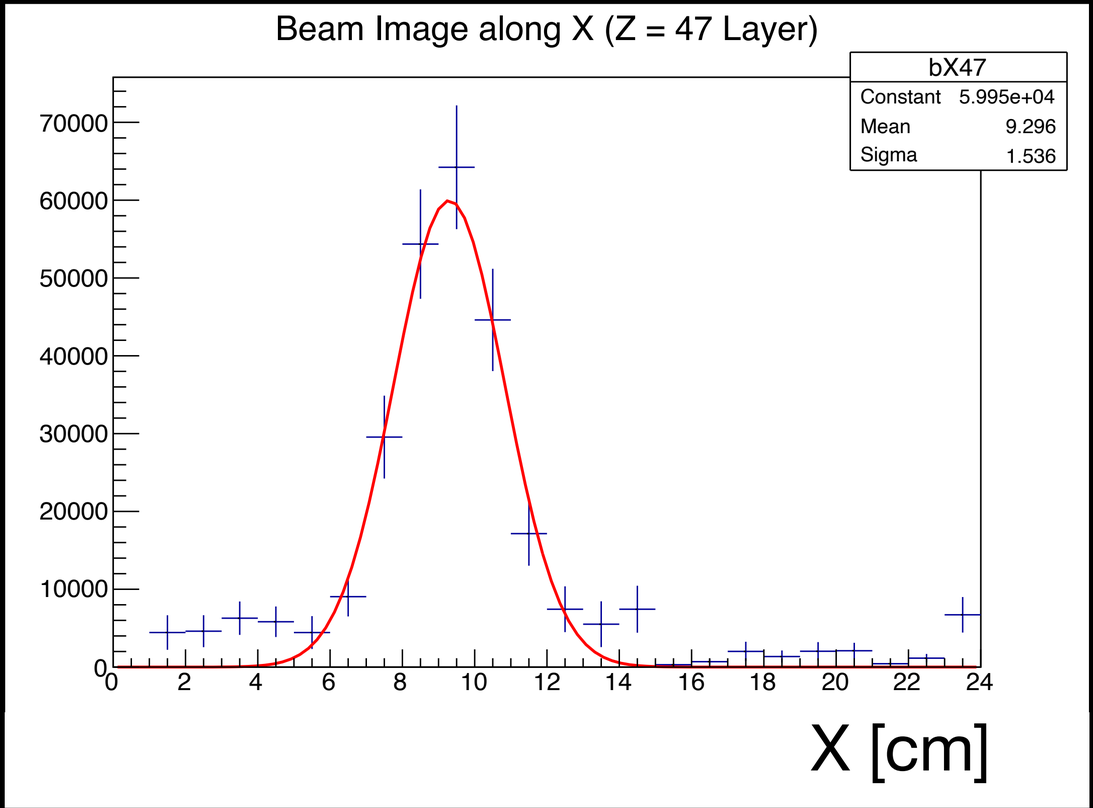
Four 1 mm collimators

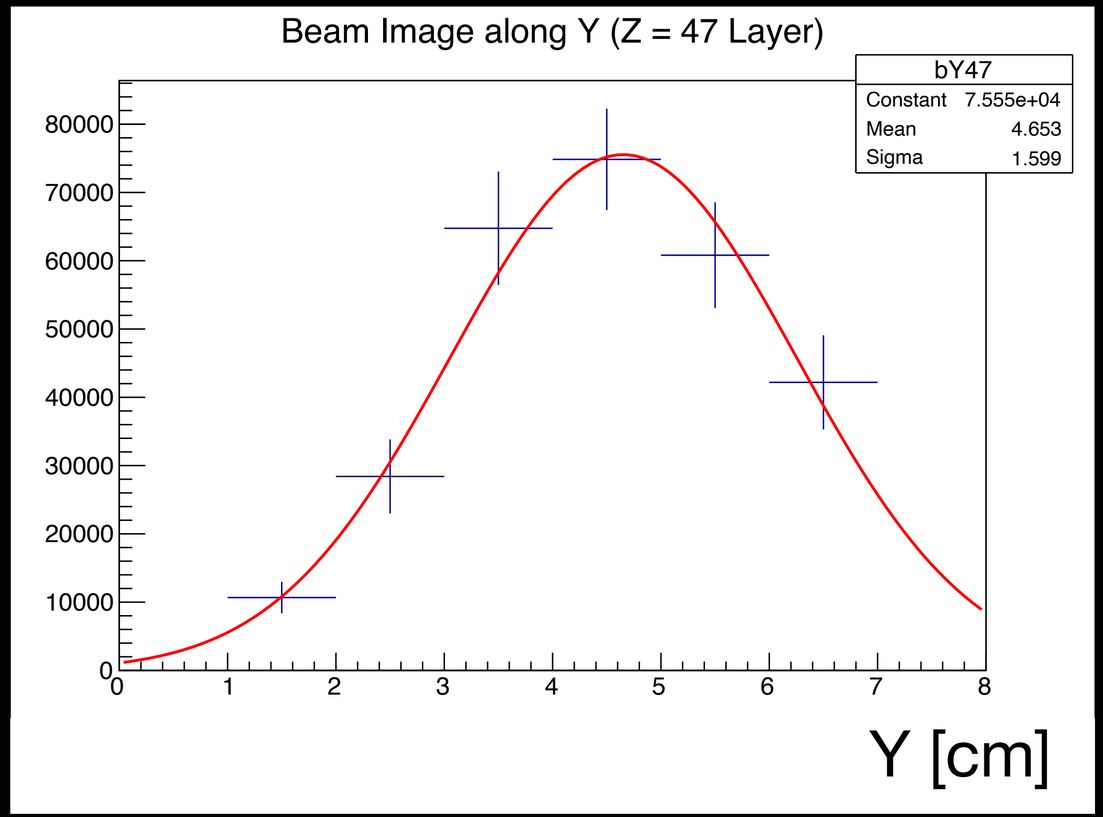
First layer voxels distribution for SFGD



Beam spread too much

Four 1 mm collimators



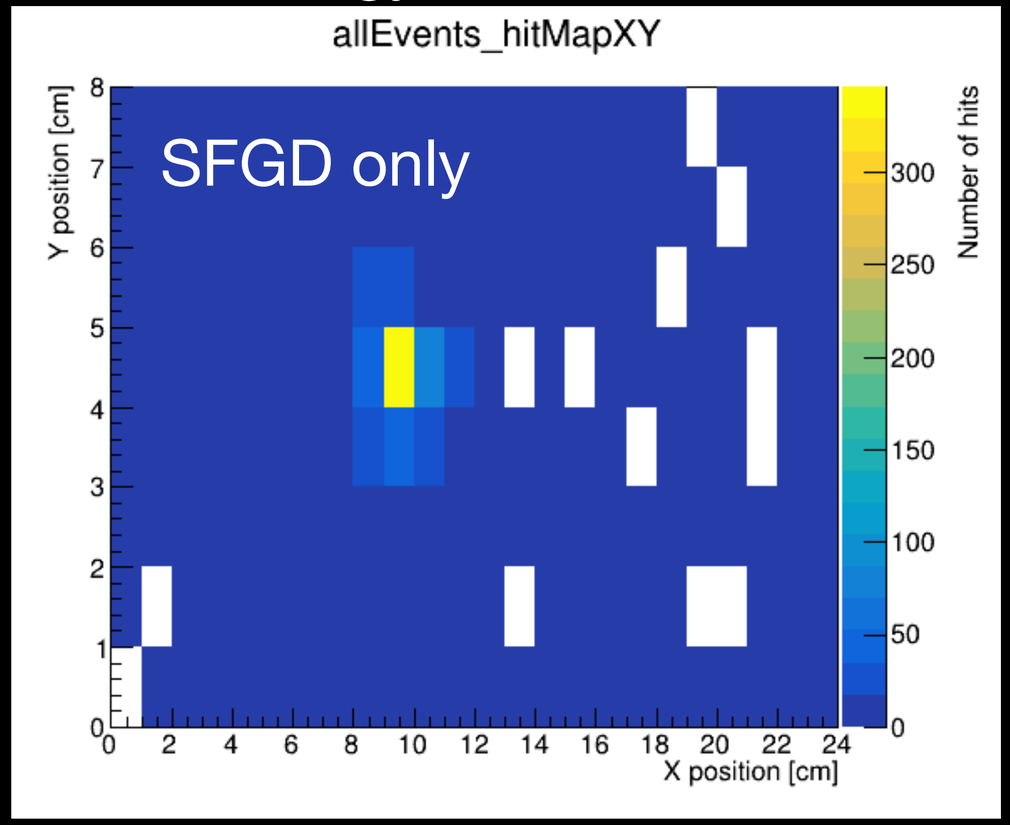


Beam is too spread: having more collimators make hard to align them

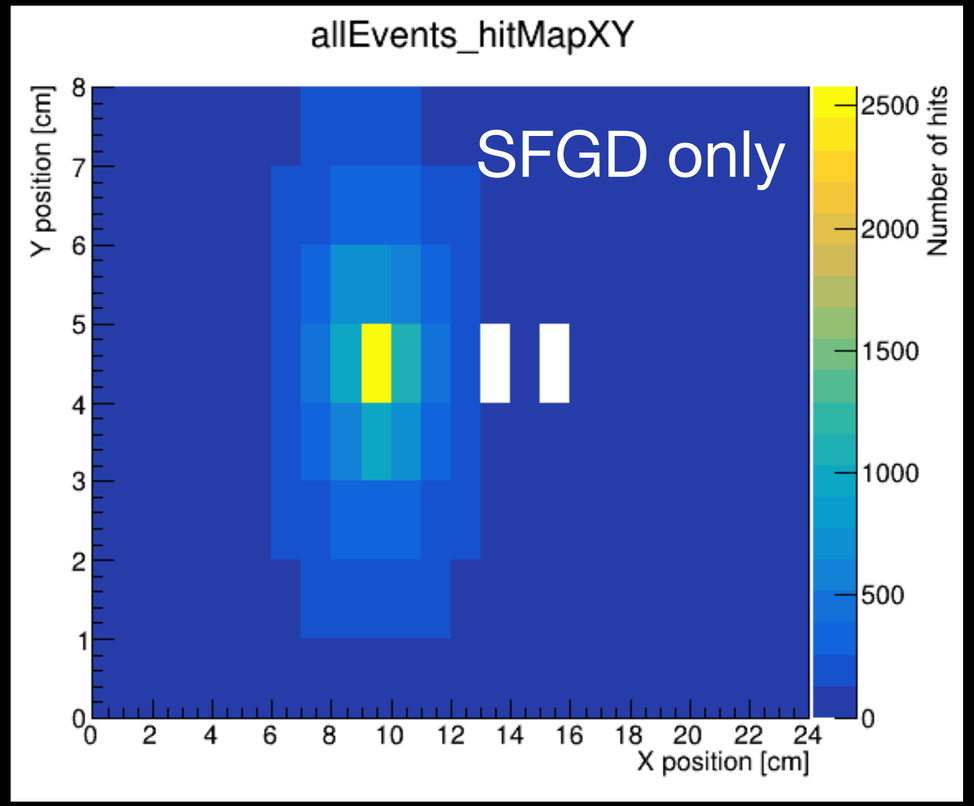
Optimal configuration

One 1 mm collimators, having more collimators make hard to align them

Energy <100 MeV

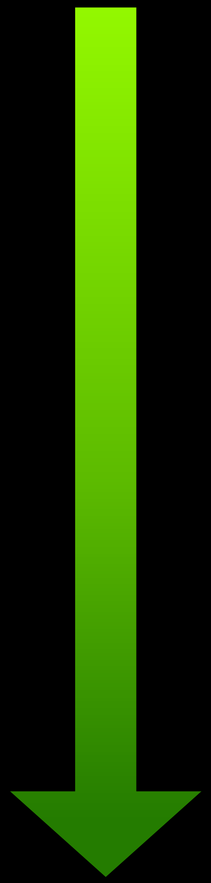


Energy >100 MeV



Backup

Beam center: selection steps

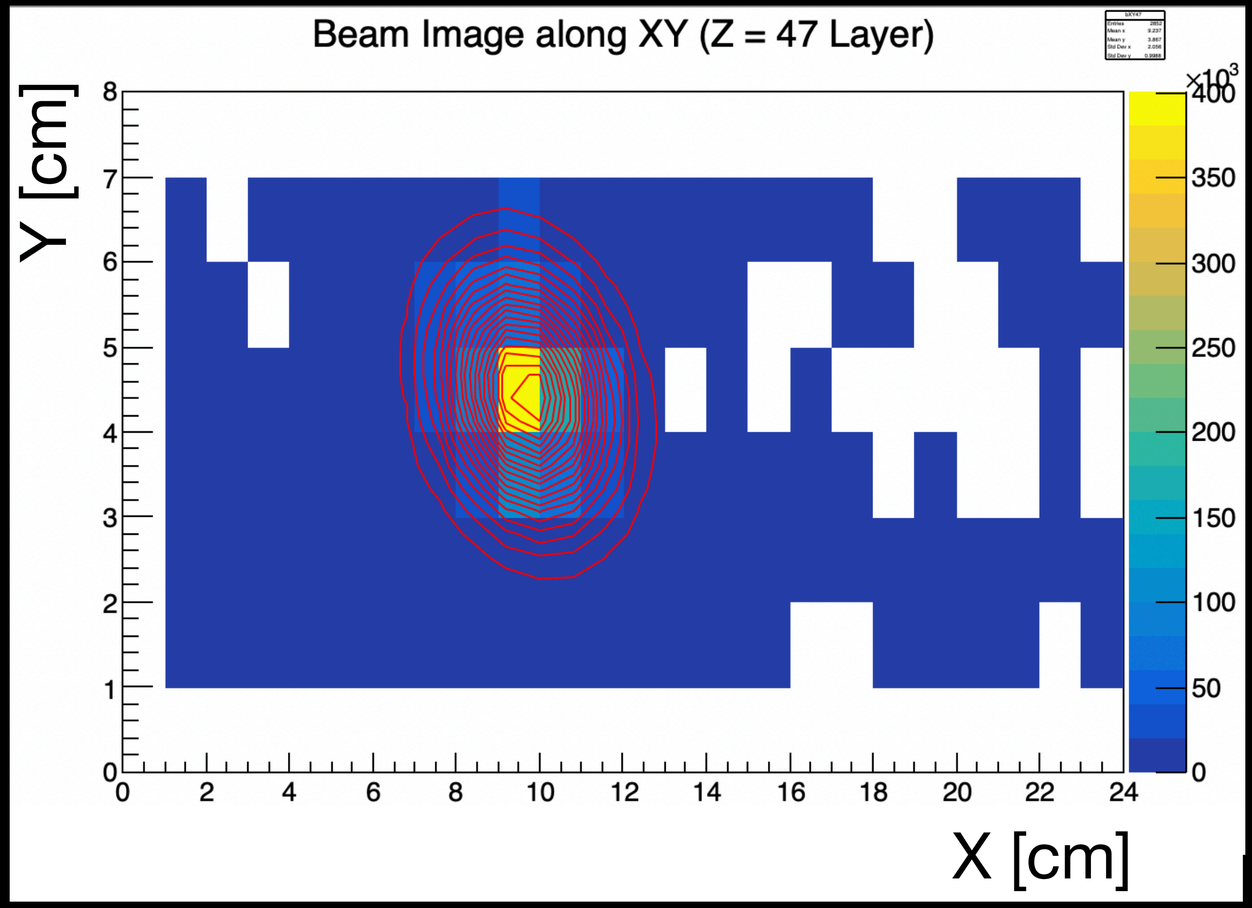


Require more than 5 PE/hit

Require more than 3 hits

Voxelization

One 7 mm collimator



One 7 mm collimator