Progress on Design and Fabrication of a New Inflector for Muon g-2
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Introduction
The superconducting Inflector is based on a KEK designed magnet using the same cross section currently being installed in the g-2 experiment. The magnet locally cancels the 1.45 T dipole field of the large iron dominated storage ring magnet, while imposing minimal perturbation to the circulating beam field, on the order of a few ppm. This is achieved through two approaches, first through design, and second through the use of a high performance superconducting magnetic shield.

Evolution of Inflector Magnet
The existing inflector has been fabricated with a closed aperture with the conductor wound directly across the beam channel. This results in significant beam losses as the beam traverses the inflector. The current inflector is being fabricated using an open ended design which simulations show resulting in significantly improved muon storage efficiency.

Coil Winding
Inflector coil winding has started, albeit with some challenges. Some additional lengths of original enamel insulated aluminum stabilized conductor from the original inflector have been obtained and insulated in the same fashion as the previous inflector magnets.

Many iterations of tooling have been generated in order to minimize damage to conductor insulation in the winding process. 3d printing has been heavily leveraged to provide rapid, accurate tooling. The models shown have since been removed and setup is in progress to wind the outer coil.

Images from various practice windings, focusing on the tight beginning and end windings from flexible model conductor to less forgiving Al Stabilized NbTi.