MOLLER Collimation

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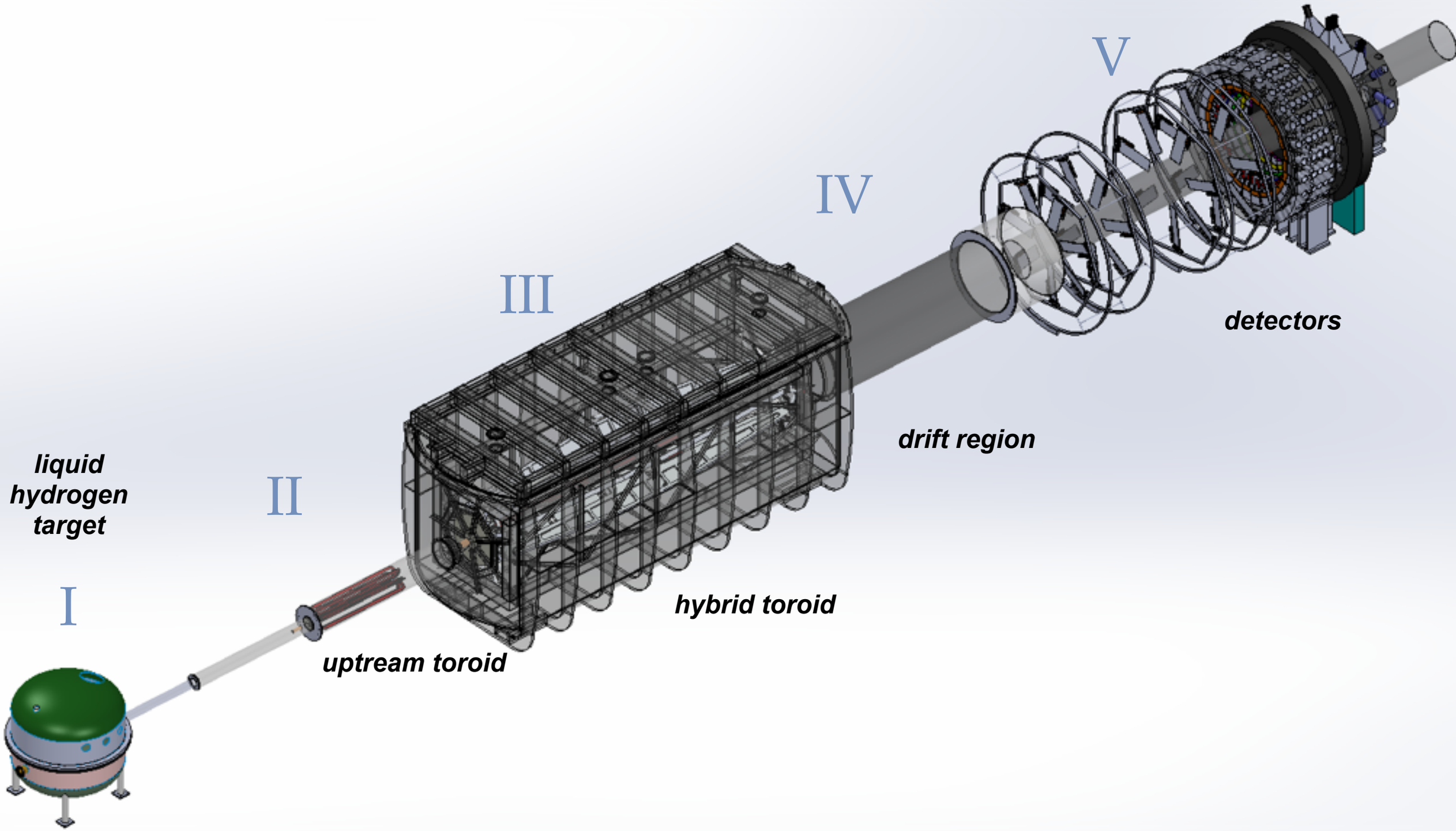
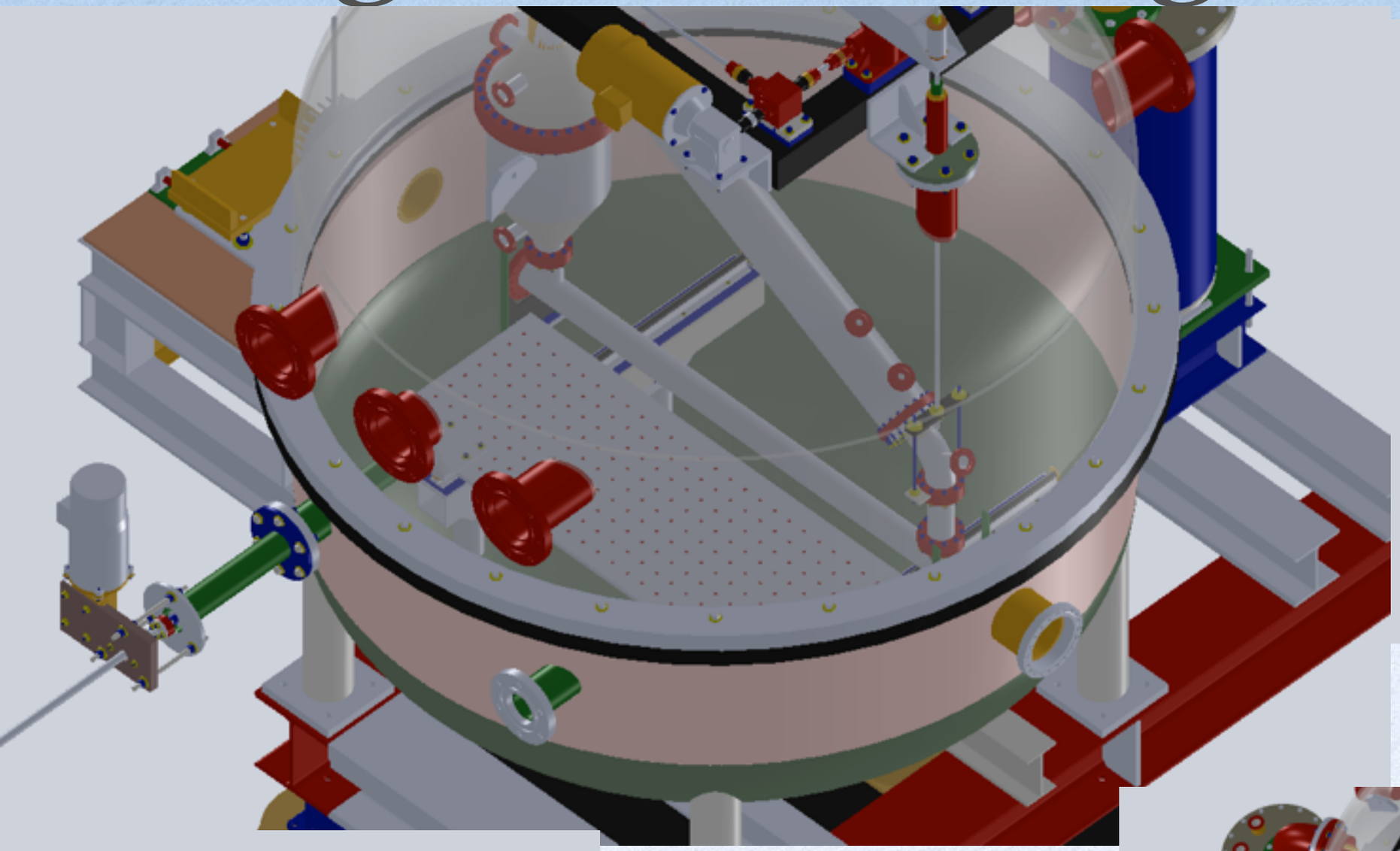
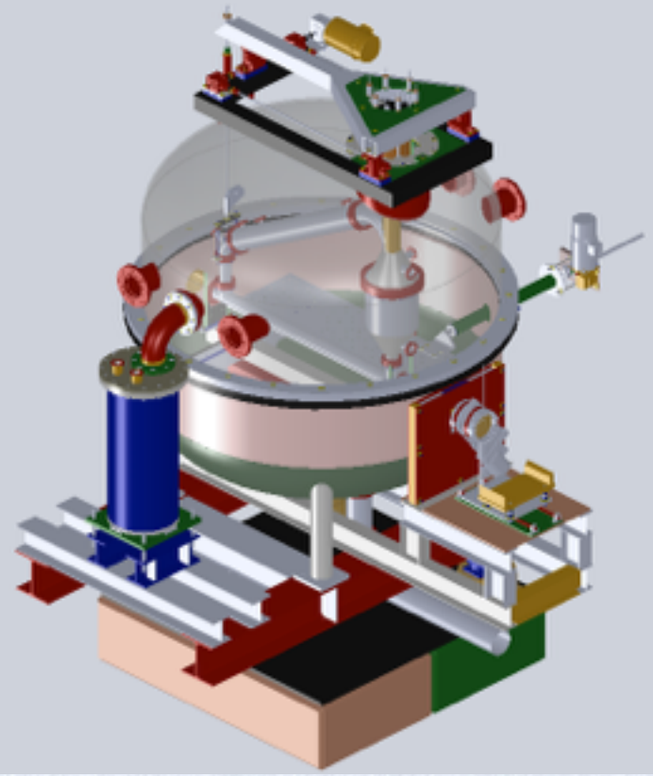
Engineering Subsystems

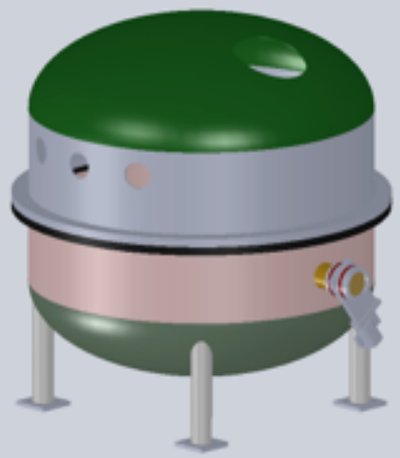


Region I

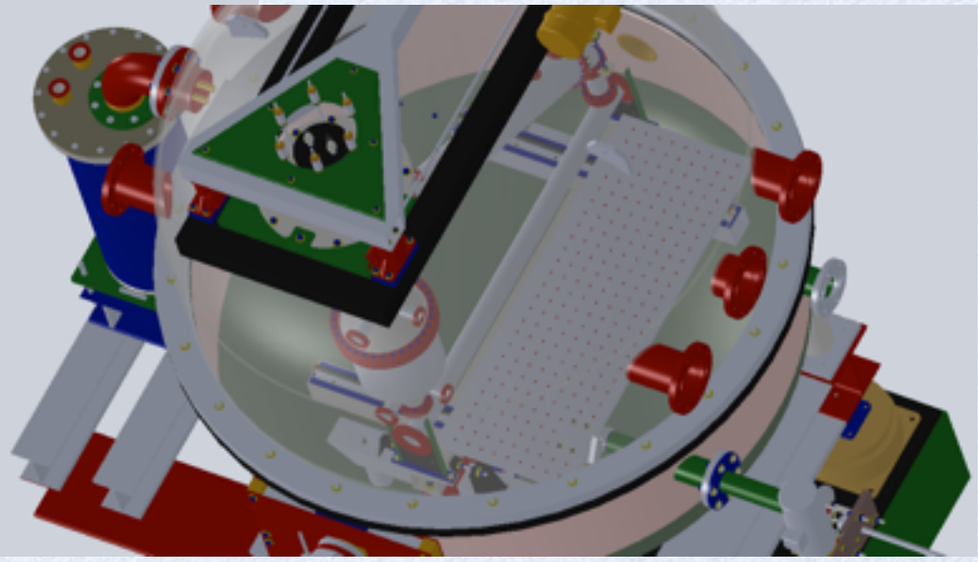
Target Scattering Chamber



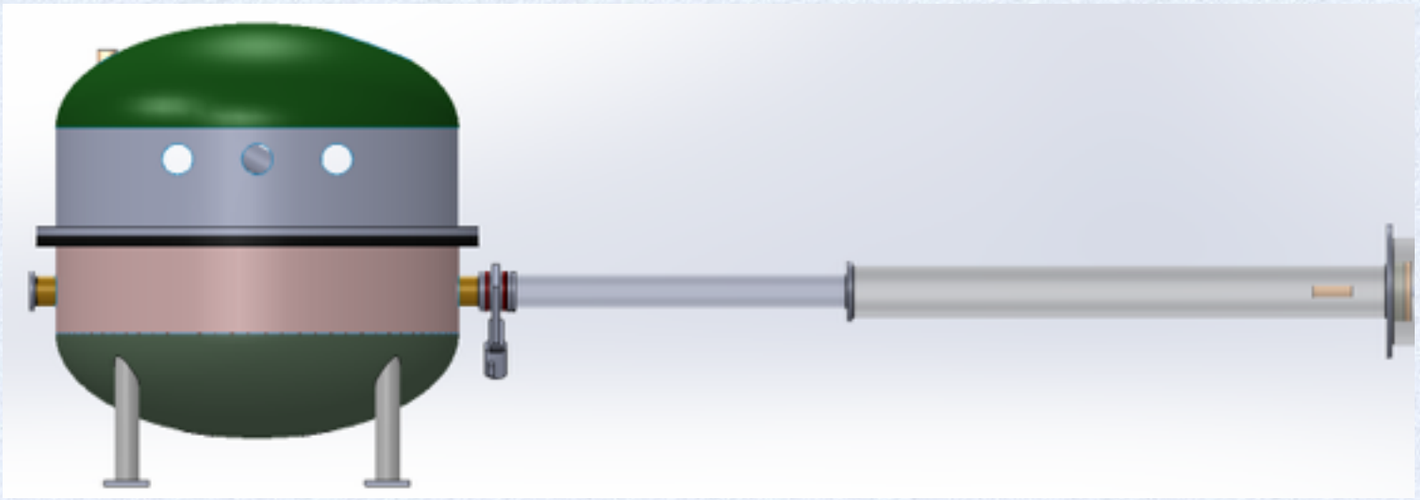


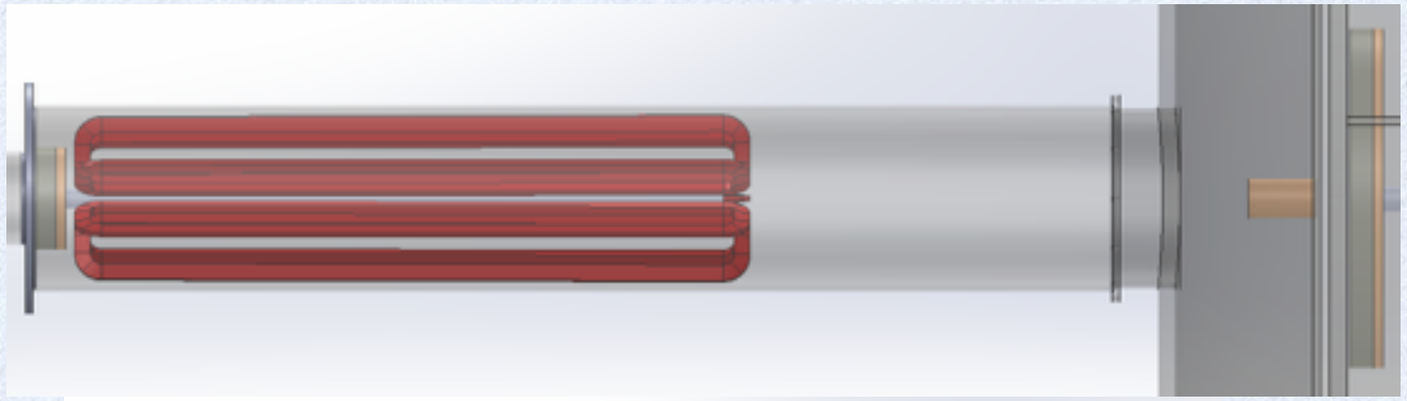


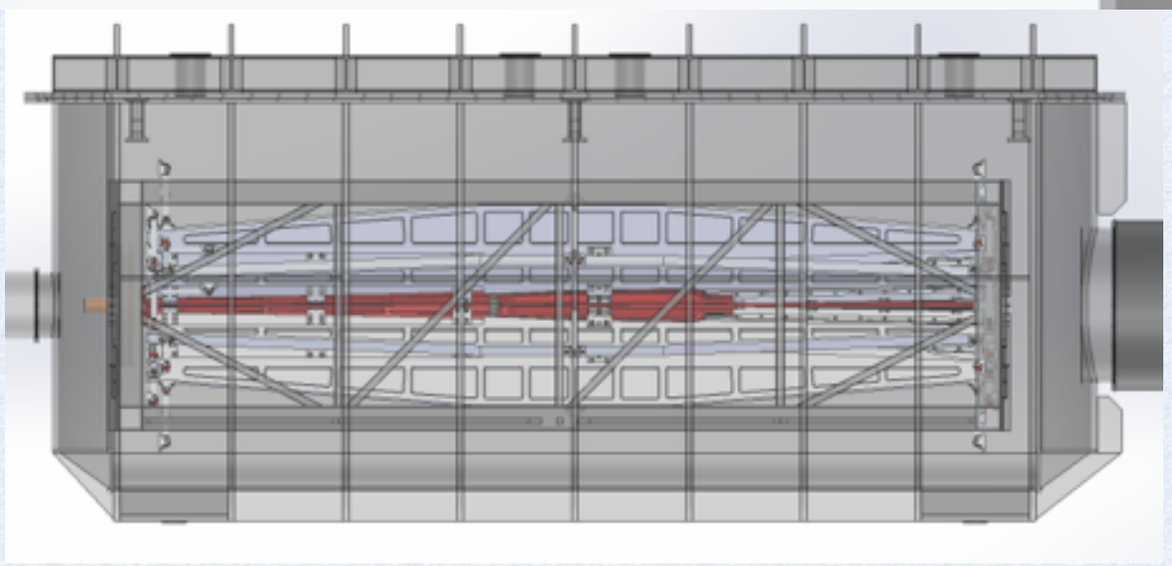
SLAC designer: Ron Rogers
working under Dieter Walz



Target and Magnets







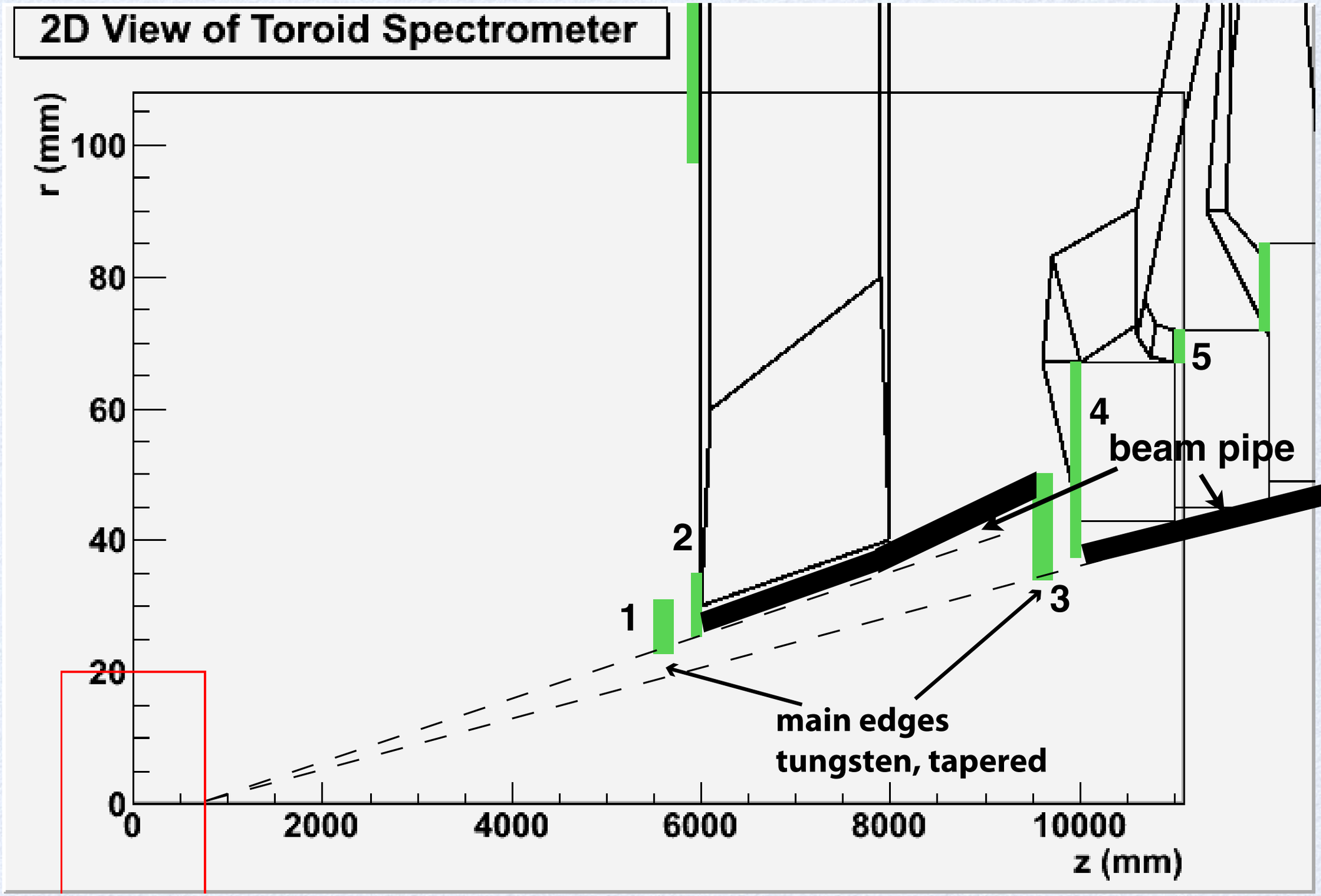
Range

z = 0 (center of target)
to
z ≈ 5.8 m

z ≈ 5.8 m
to
z ≈ 9.9 m

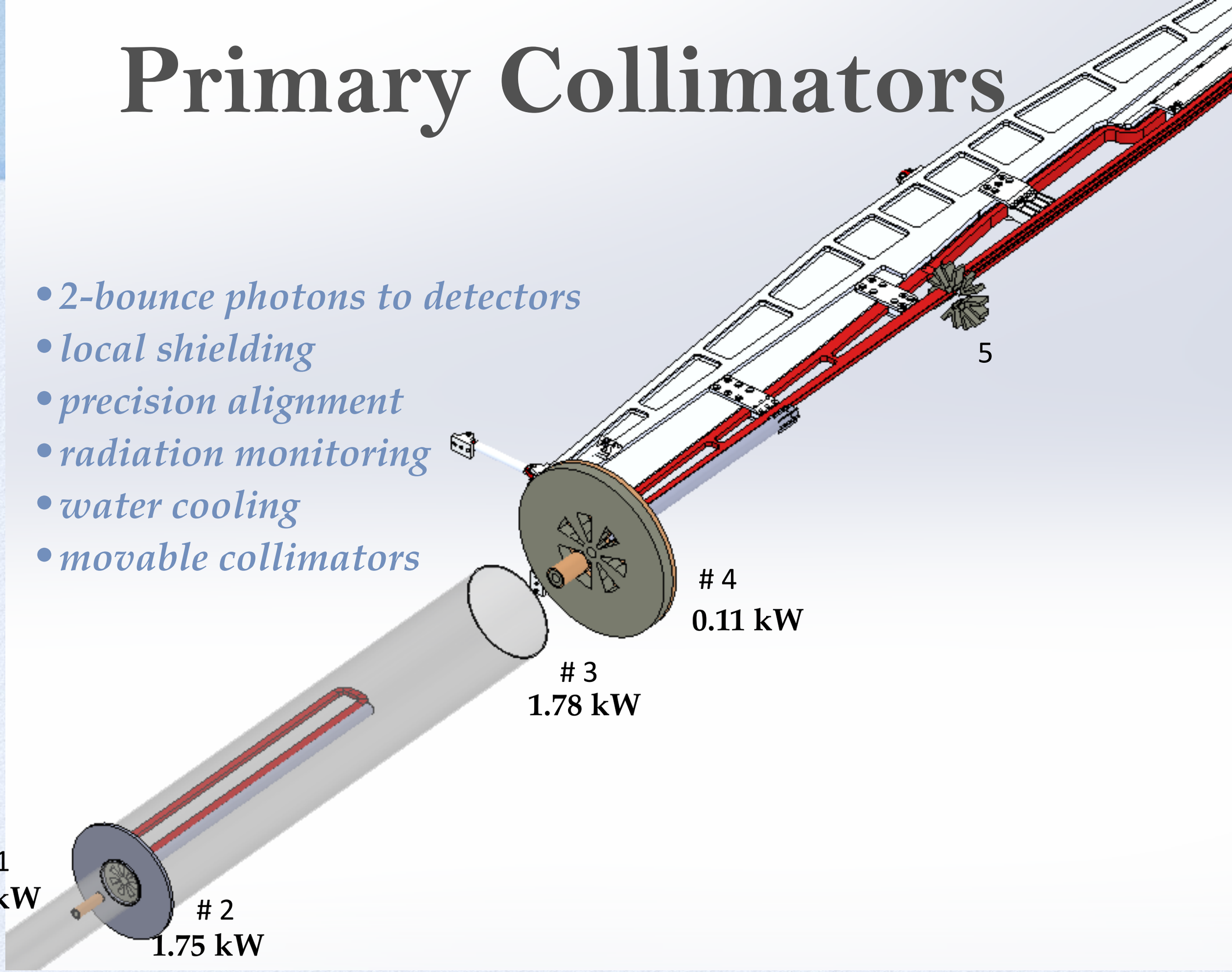
z ≈ 9.9 m
to
z ≈ 17 m

Collimation Concept

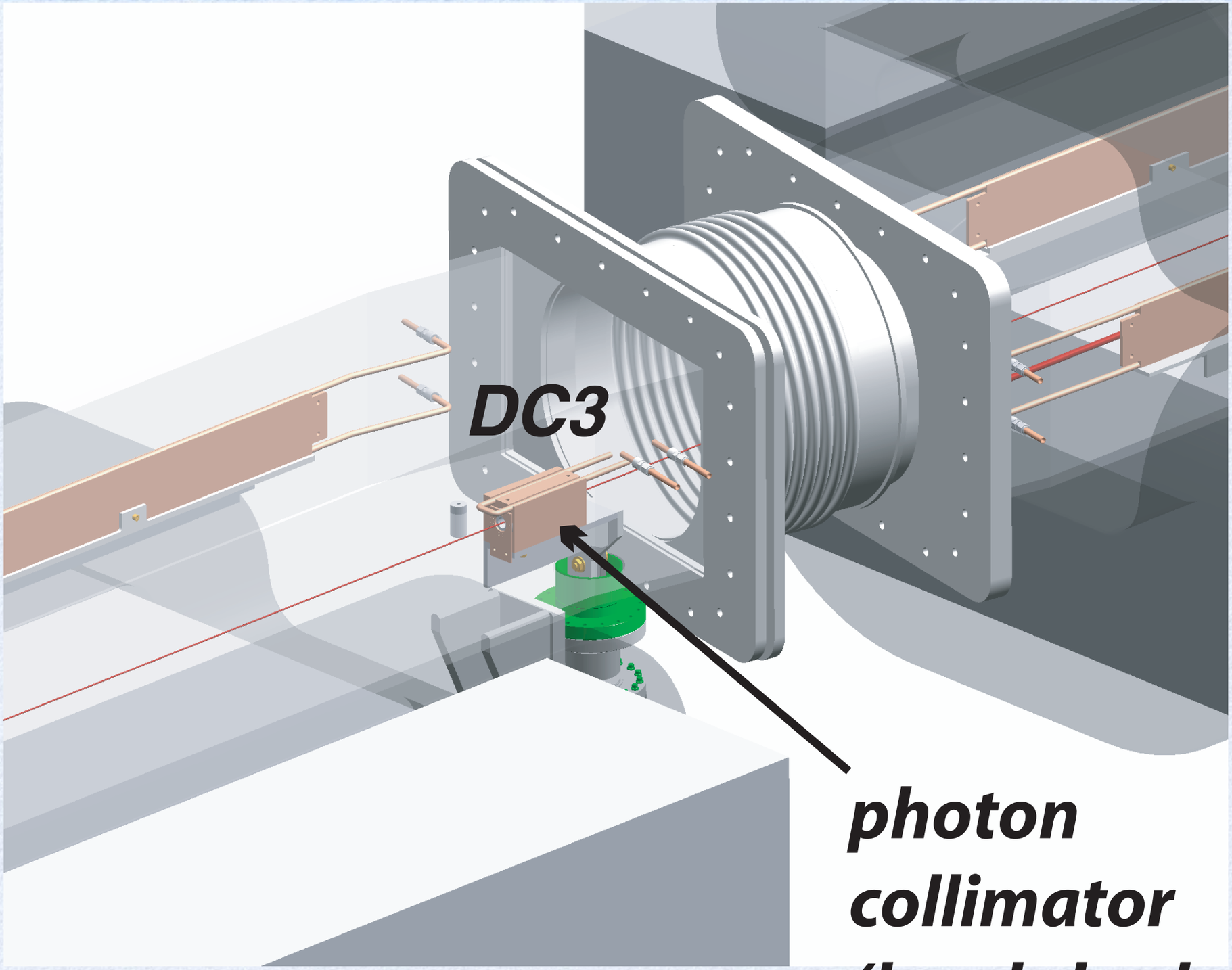


Primary Collimators

- *2-bounce photons to detectors*
- *local shielding*
- *precision alignment*
- *radiation monitoring*
- *water cooling*
- *movable collimators*

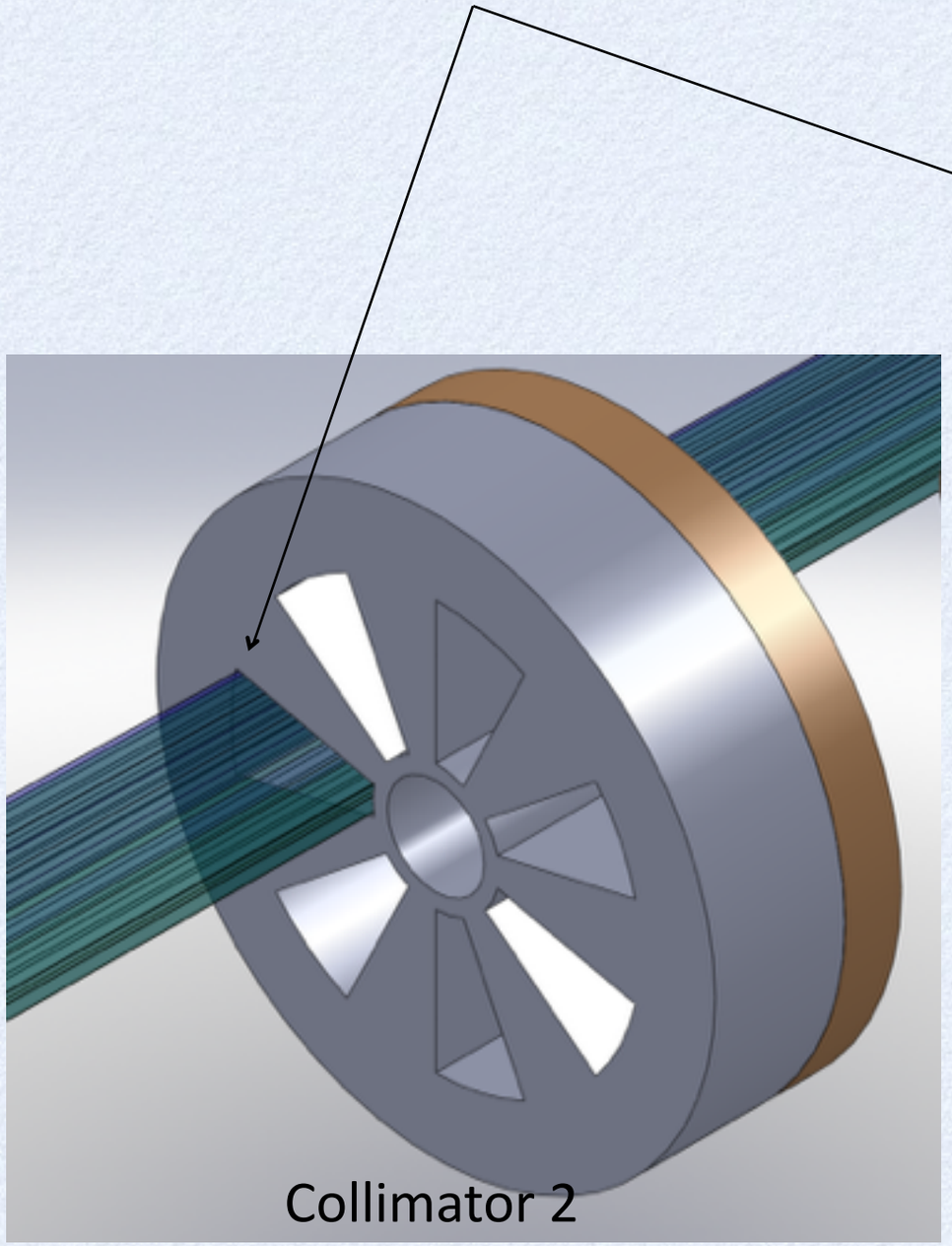


E158 Collimator Concept

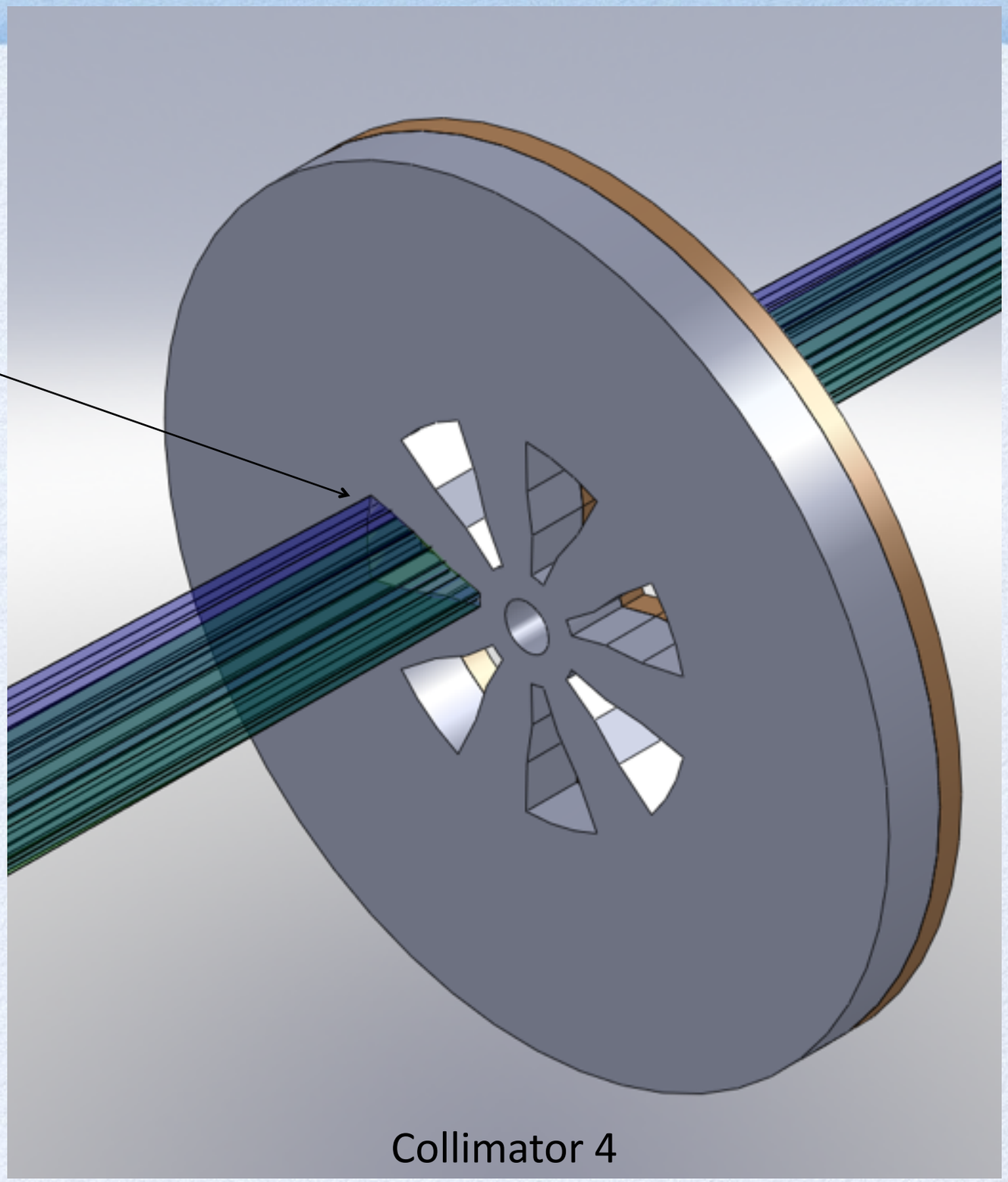


Acceptance Collimators

Petal cuts in collimators were defined by cross section of ee electrons



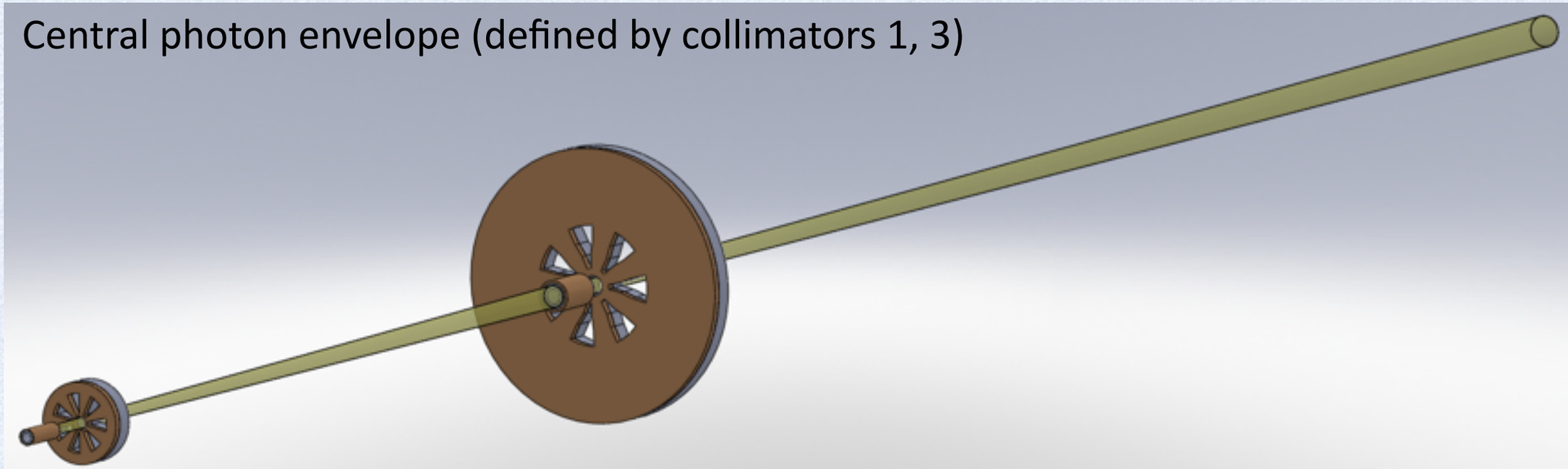
Collimator 2



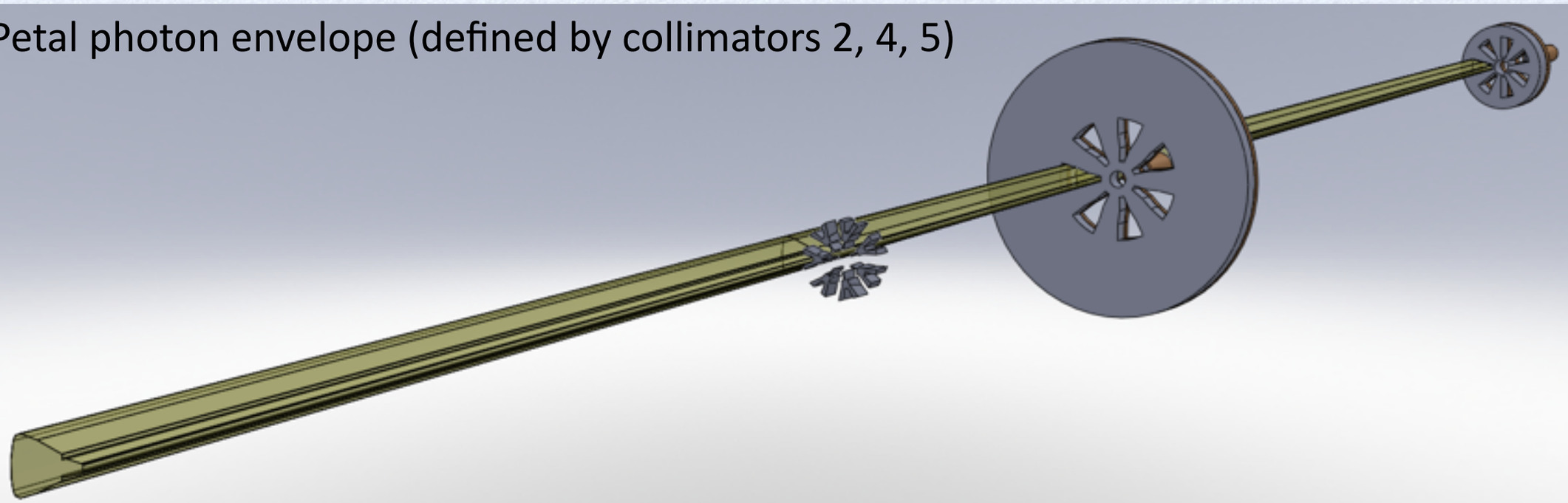
Collimator 4

Photon Envelopes

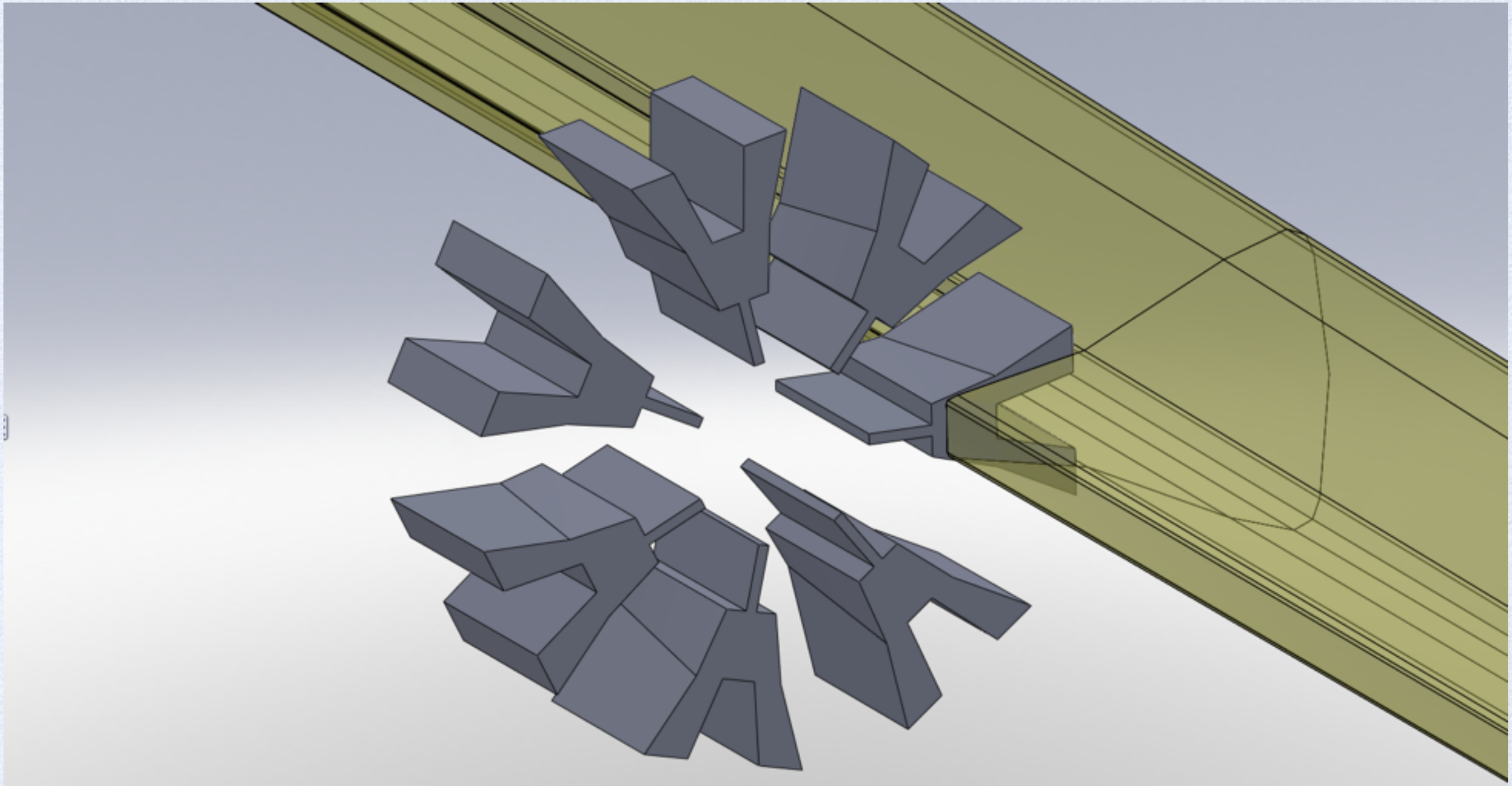
Central photon envelope (defined by collimators 1, 3)



Petal photon envelope (defined by collimators 2, 4, 5)



Collimator 5



Photon beam incident on collimator 5

2-Bounce System

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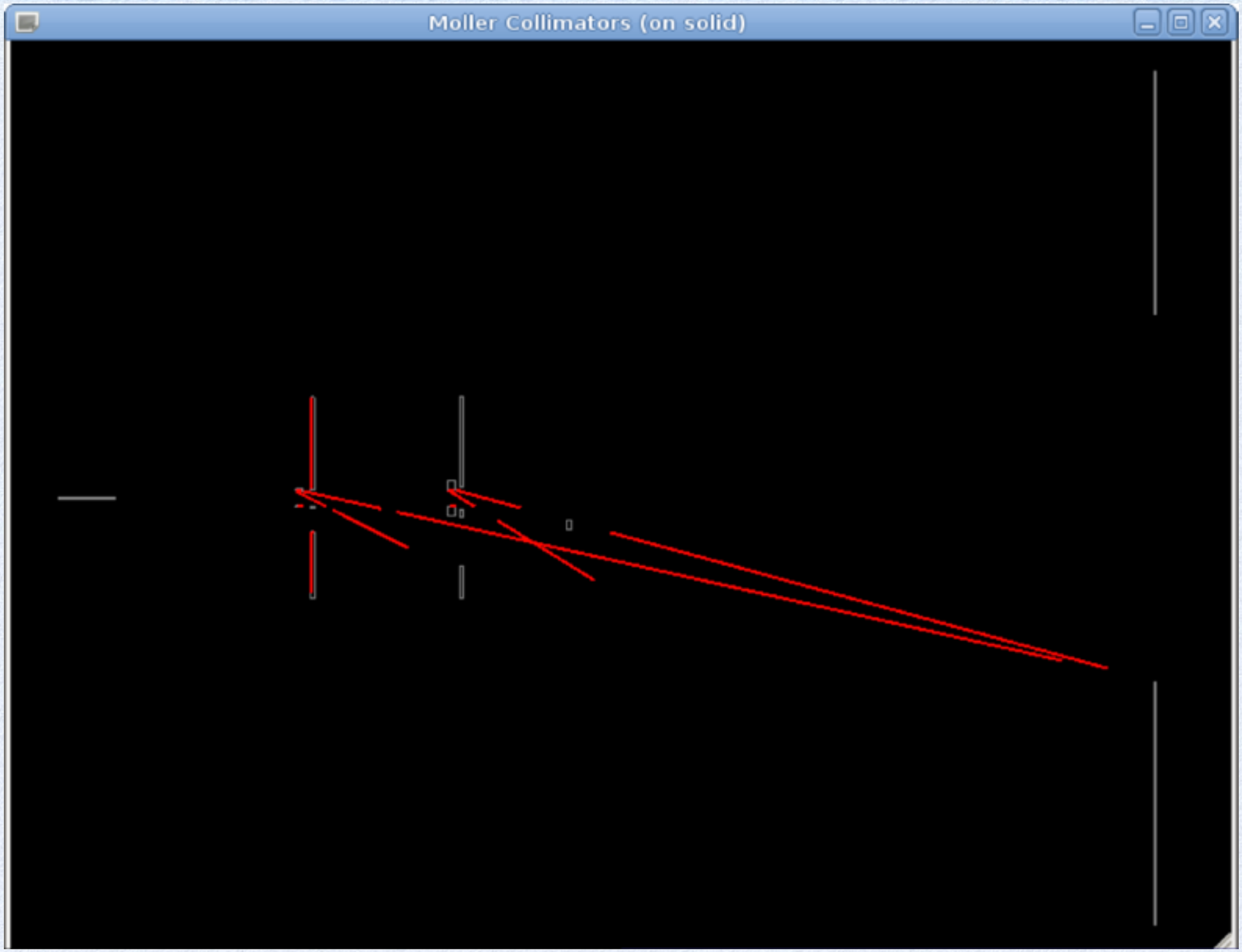
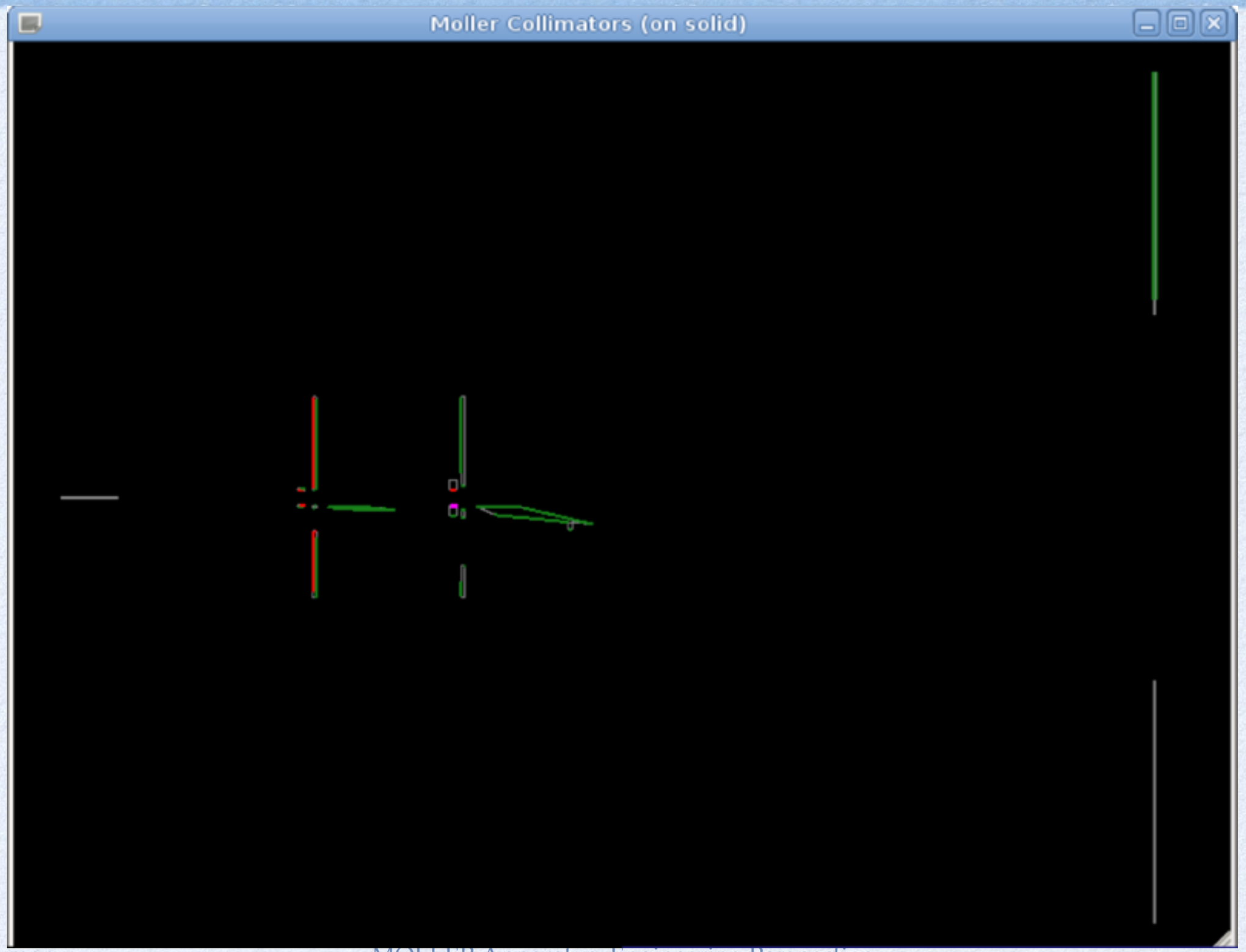
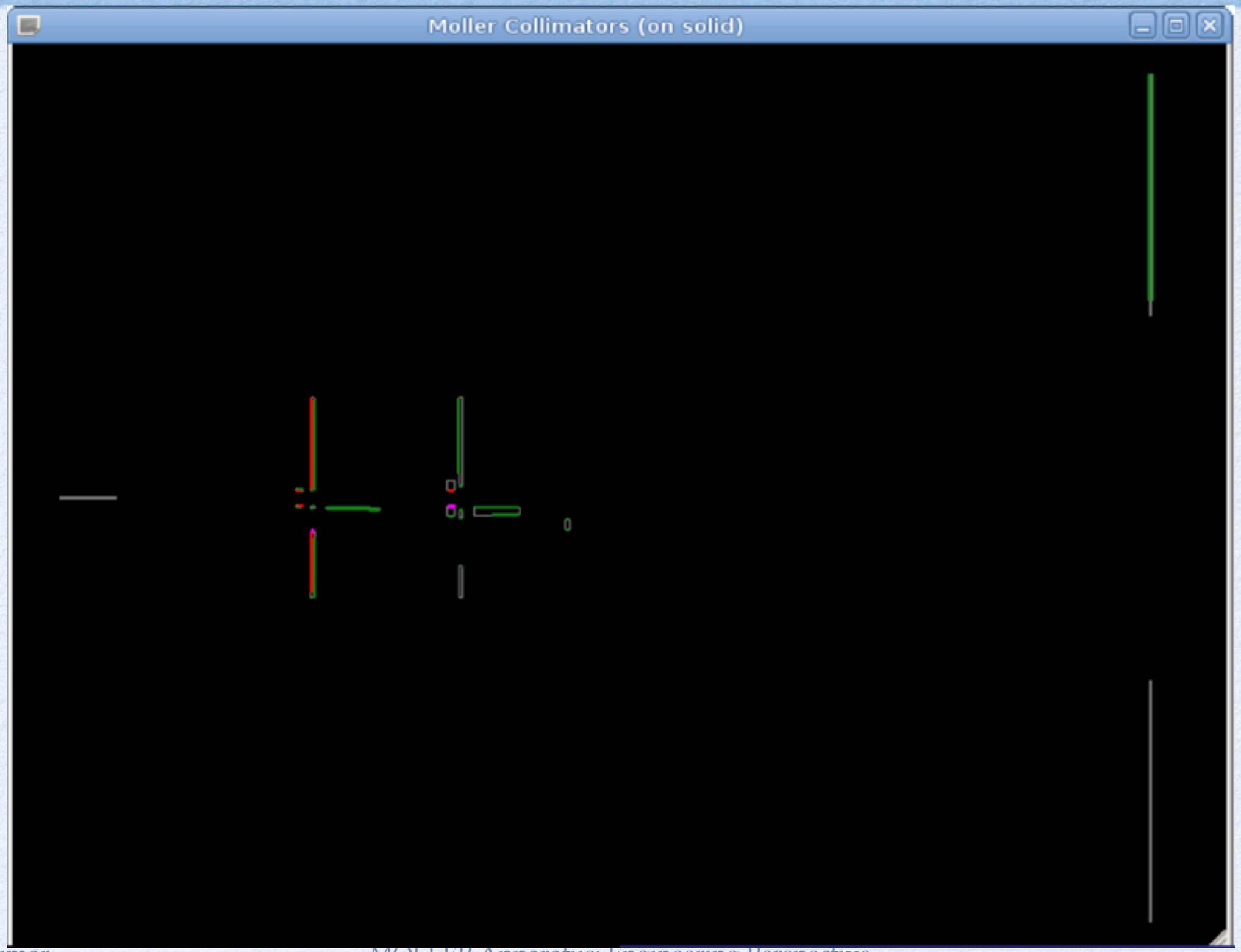


2-Bounce System



2-Bounce System



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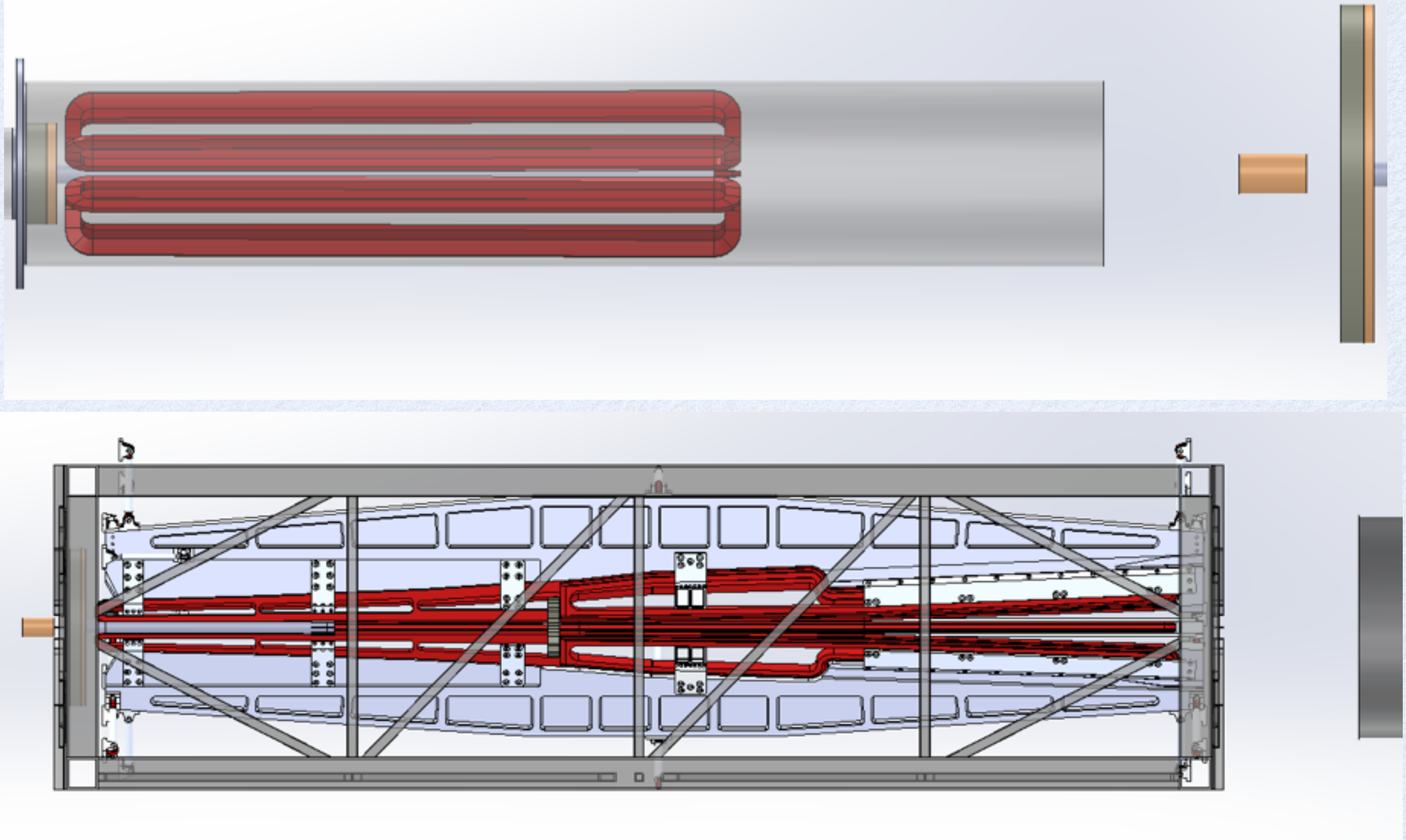
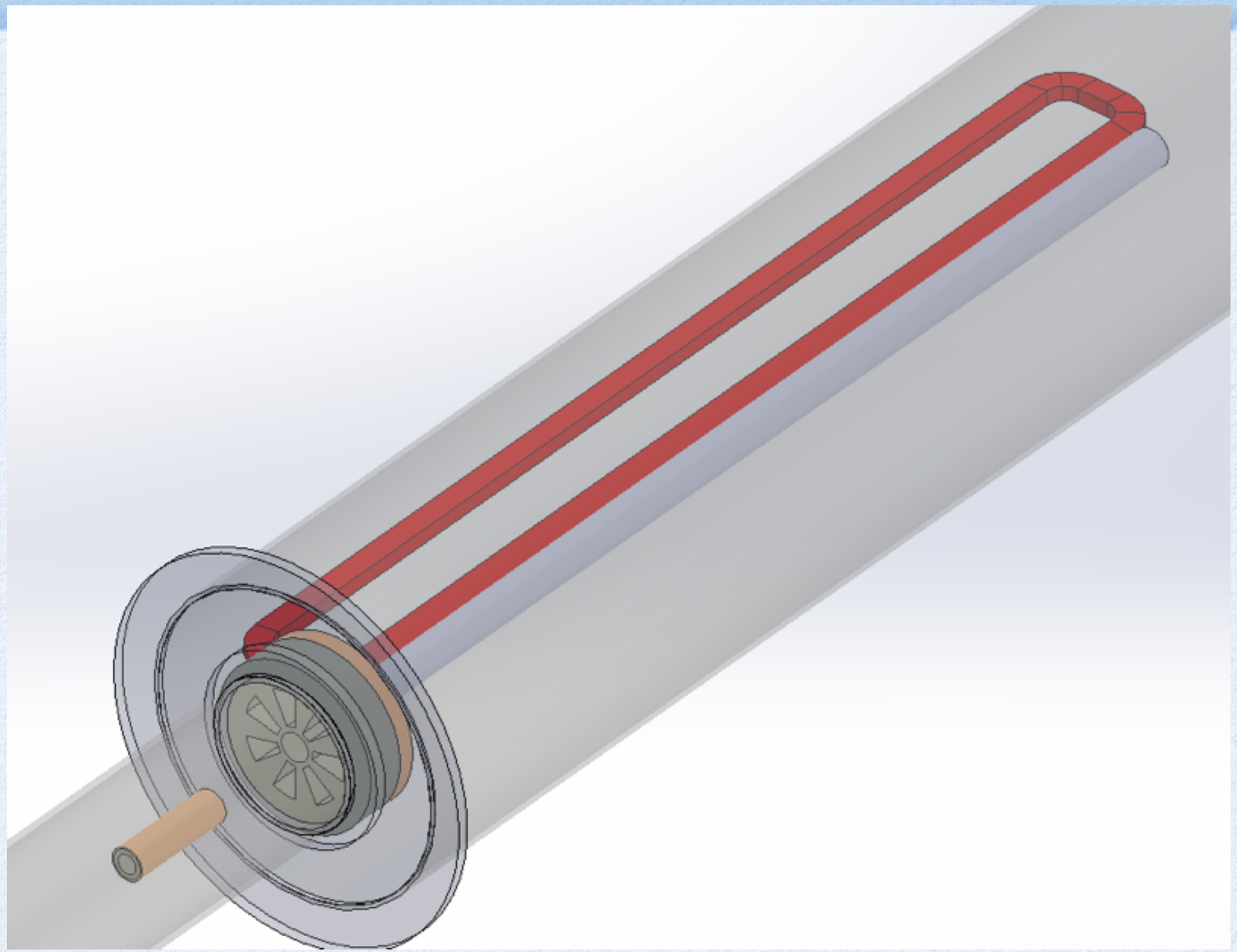


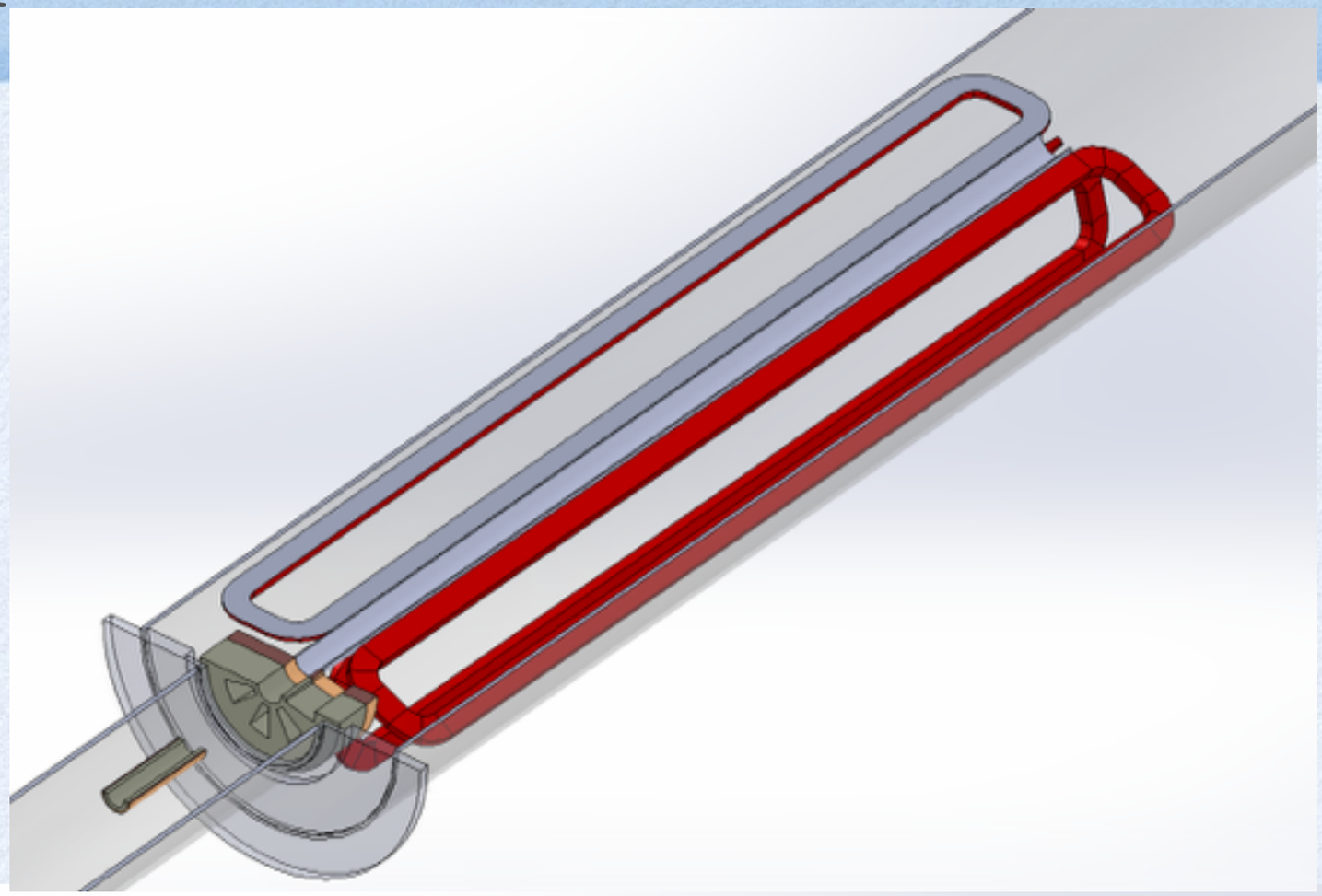
Region II

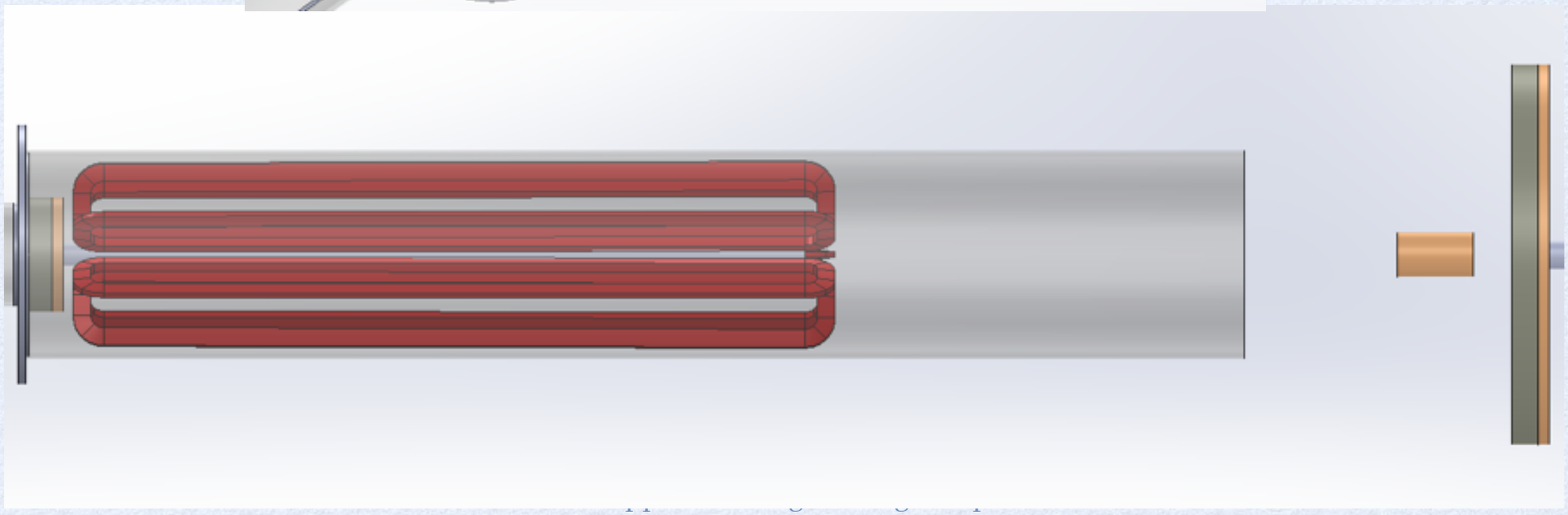
Upstream Collimation



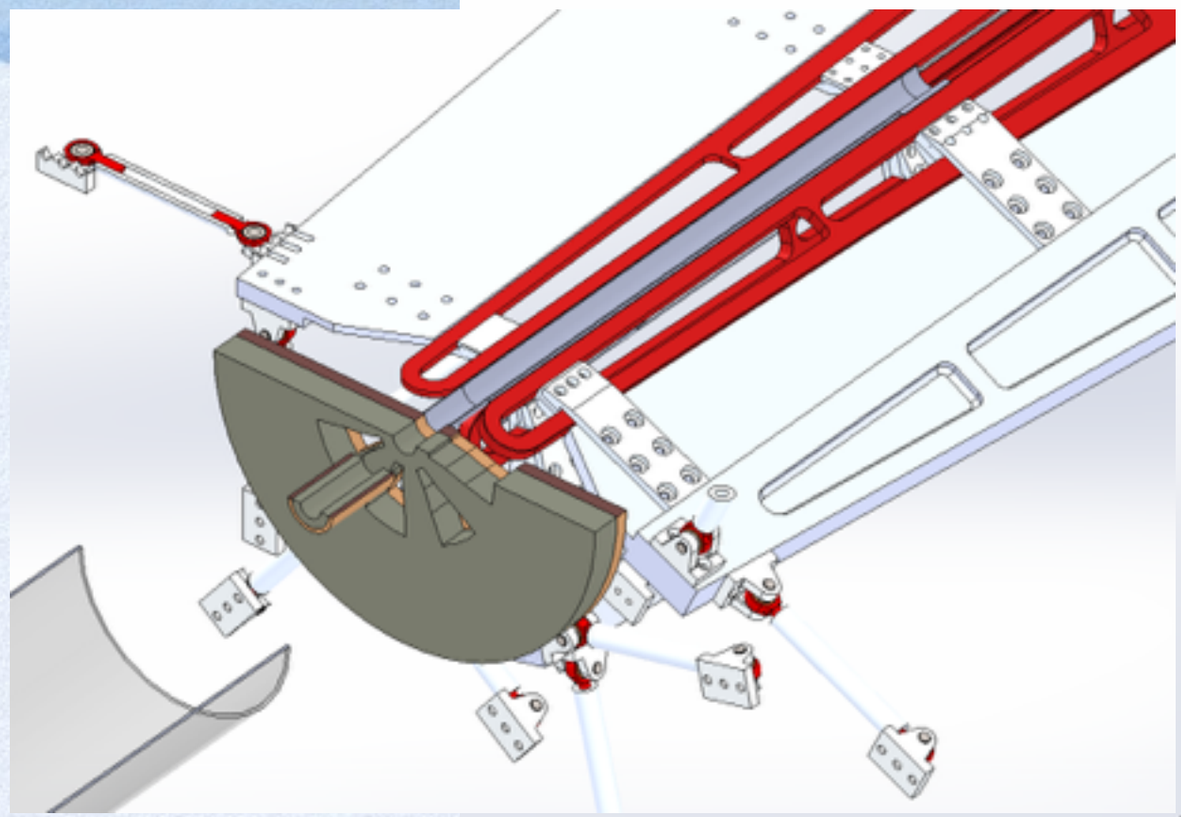
Region II

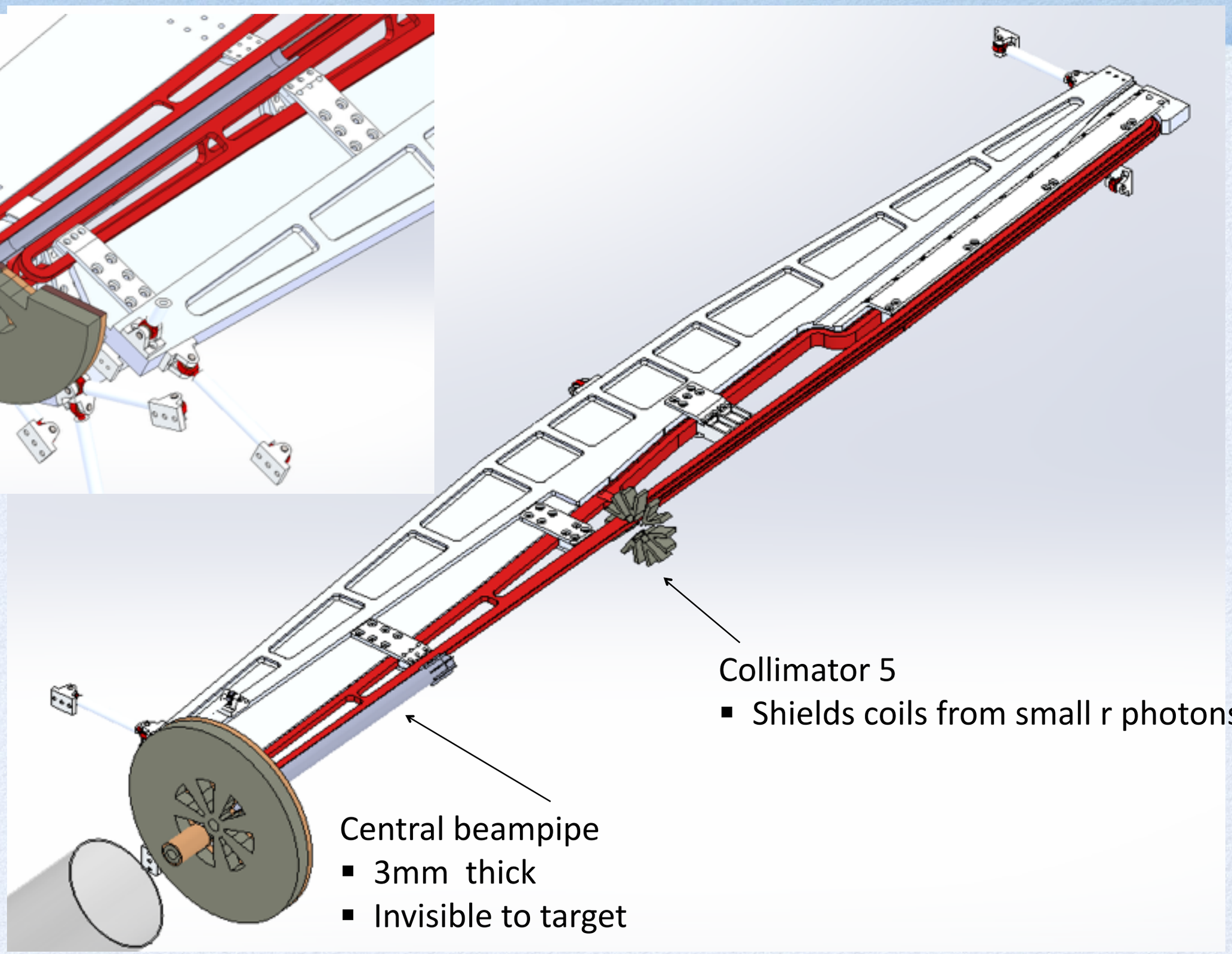
Upstream Collimation





Hybrid Toroids





Collimator 5
- Shields coils from small r photons

Central beampipe
- 3mm thick
- Invisible to target