



Active μ -Shield R&D

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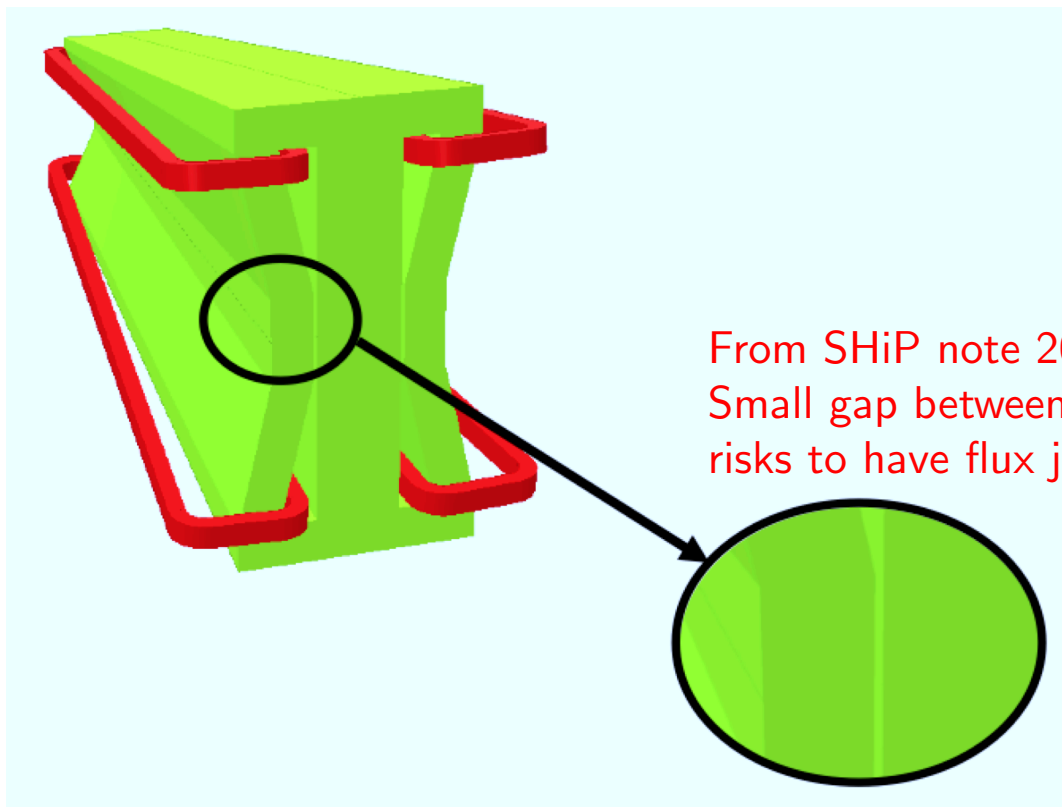
- Present μ -shield in SHiPSoft: optimized with simple tracing simulation: JINST Vol 12, May 2017
- What are the next steps to come to a real shield:
 - Optimize with full Geant4: see Oliver Lantwin his talk.
 - Measure the “real” μ -flux from our SHiP target: see Eric van Herwijnen his talk.
 - New tricks to increase simulated muon-flux: see Thomas Ruf his talk.
 - Proposal to design, produce and test prototype of the most critical/demanding magnet in the shield: this talk.



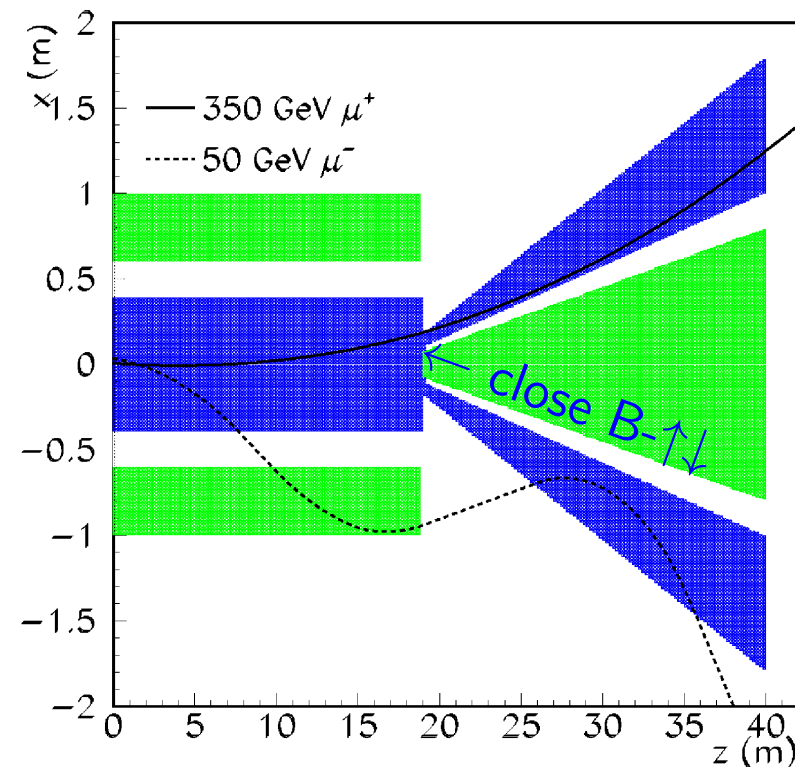
The Most Demanding Magnet

From JINST Vol 12, May 2017:

“At start of this second magnet, the two field polarities should be as close in x as possible.”



From SHiP note 2015-003 (V.Baylis et al.):
Small gap between opposite direction B-fields
risks to have flux jump through the gap.

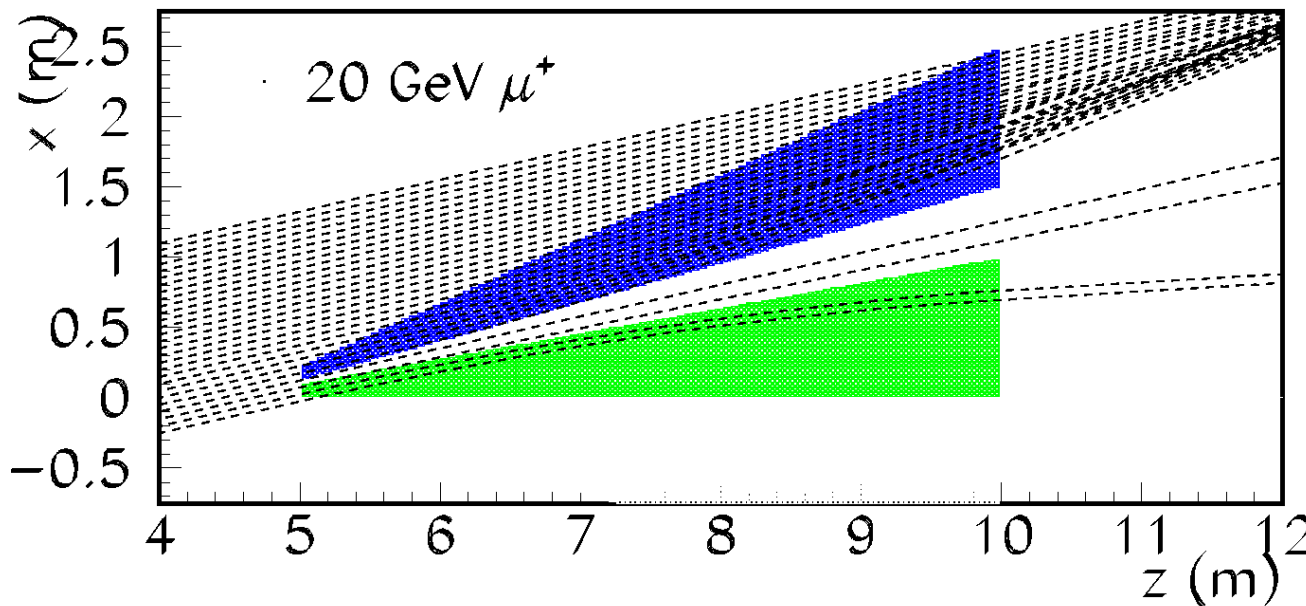
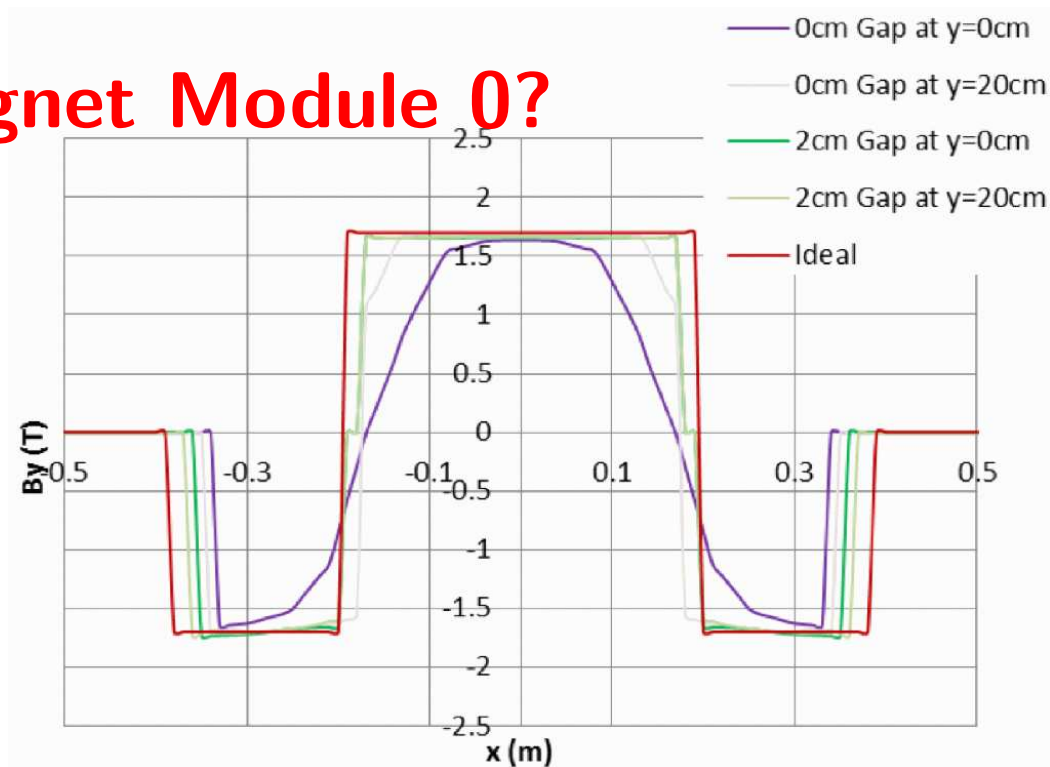




μ -Shield Magnet Module 0?

From SHiP note 2015-003 (V.Baylis at al.):
2 cm is “nearly” as good as optimal.

- Cannot measure field in Fe.
- Scan magnet through μ -beam, and measure position+angle after magnet.
- Can use same Opera prototype straws as for μ -flux measurement.





Module-0 (Agressive?) Schedule

- Geant4 optimization delivers size of this magnet: 8/2017
Half weight of small gap 5.5 m long magnet in SHipSoft: 21 ton.
- Check with engineers (9-10/2017):
 - what is a good length to check FE-simulation,
 - probably need only one half,
 - height to check flux not jumping across gap
- Design of magnet: end 2017
- Andrey Golutvin:
Possibility to largely fund this prototype via approved Russian project with MISIS named: “Prospective technological, methodical and material solutions in searching for new physics phenomena”:
to be clarified by October 2017.
- Production of magnet: spring 2018.
- Get a muon-beam for a week to measure in 2018 SPS schedule.

