

# Magnet Design Discussion, 26 October, 2021

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## Magnet for 2022 tests

- use existing magnet from Charles Epstein's experiment
  - 280 mm bend radius, 1.65 kG, suitable for up to 13.3 MeV/ $c$  leptons
  - mechanical design exists, pass this on to Jan and Xiaqing
  - calculate field map, simulate in GEANT4, ray traces
  - determine acceptance and rates
- using target ladder and scattering chamber currently at TRIUMF
  - modify flange at  $45^\circ$  to connect to this magnet
  - will likely need to position  $\sim 750$  mm from target
  - will need new stand to support magnet.
- focal plane detector needs to be designed and made



## Magnets for real experiment

- ask Harald Merkel to design suitable magnets for 30–50 MeV beams
  - nominally 300 mm bend radius, 3.2 kG, up to 30 MeV/ $c$  leptons
  - provide mechanical design, pass to Jan and Xiaqing
  - calculate field map, simulate in GEANT4, ray traces
  - determine acceptance and rates
  - optimize design as needed
- use existing target ladder
- design and build new scattering chamber
  - adjustable magnet position
  - 15°– 25° on one side
  - 23°– 33° on other side
  - 2 inch beamline at TRIUMF limits magnet position  $\Rightarrow$  smaller ?
  - new stand to support magnets and shielding
- focal plane detectors need to be designed and made