Alignment errors on emittance measurements for MICE

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Key Features of MICE:
- Hydrogen absorbers
- RF cavities
- Solenoidal scintillating fibre trackers for input/output emittance measurement.

Ionization Cooling:
- The Muon Ionization Cooling Experiment (MICE) at ISIS in the Rutherford Appleton Laboratory will demonstrate ionization cooling
- Prototype for a neutrino factory cooling channel.
- MICE will measure reduction in beam emittance for a number of emittance beams with 1% error

Goal of study
Constraints on spectrometer alignment from GEANT4 simulation.

Expected Cooling performance

Results:
- Largest differences: 0.9-1.5%
- Aim to reduce alignment errors to less than 1/3 of statistical errors:
  - Rotation precision < 1 mrad
  - Translation precision < 3 mm