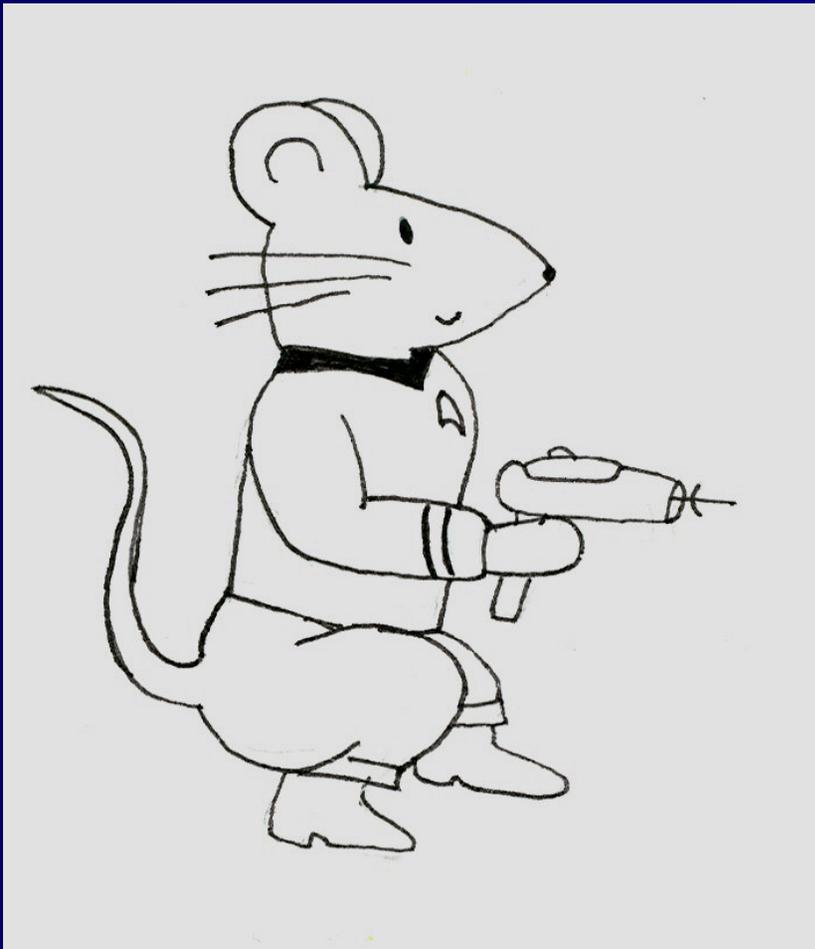


# Sci Fi Simulation Status



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# DetModel

- Vacuum in tracker volume has been replaced with 1 atm He at room temperature in order to test effect it has on resolution.
- All other parameters are as at Osaka meeting.
- Still need to do a study to find optimum station spacing.

# Simulation

- Much progress has been made in the simulation of the cooling channel (see Yagmur's talk)
- 11 runs each of 50k events have been produced for studying tracking efficiency as a function of input emittance.
- Beams of  $0.5-9.5 \pi$  mm rad were produced with help from Chris
- Kevin Tilley also produced a  $2.5 \pi$  mm rad beam using TURTLE

# Digitisation

- As reported at the RAL meeting, the digitisation is slightly more realistic in terms of the handling of the TDC aspect of the VLPC readout.
- In the future the discriminator threshold will be properly modelled, however it is not expected to make a significant difference.

# Reconstruction

- Thanks to the implementation of Unit Tests, a number of bugs have been found and fixed.
- Recent improvements include:
  - Use of clusters in the track fit
  - Use of a field map in the track fit
  - Fixed calculated light in a space point
  - Added TDC/true time information to output NTUPLE so 6D emittance can be studied

# Analysis

- Output from reconstruction and MC truth information is converted into a format that can be read in by ChrisAnalysis.exe
- ChrisAnalysis is used to determine the 4D and 6D emittance at the two trackers from reconstructed and truth parameters.
- From MC truth parameters, already demonstrated that G4MICE does cool the beam (or heat it for low input emittance).
- Currently running the reconstruction and aim to measure tracker resolution in emittance and remove bias in emittance seen at the RAL meeting.

# Near term goals

- Complete testing/debugging of Reconstruction code and run production of 550k events already simulated.
- Perform analysis of 4D and 6d emittance resolution and demonstrate tracker performance.
- Finish SciFi unit tests for the DetModel and DetResp packages