



# From Analyses To Papers

---



C. Rogers, ISIS Intense Beams Group  
Rutherford Appleton Laboratory

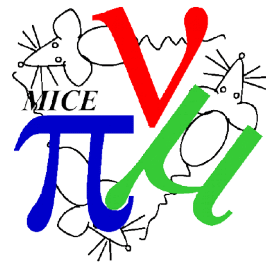
# Reminder – Publication plan



| Paper  | Contact         |
|--|-----------------|
| Multiple Coulomb Scattering in lithium hydride | John Nugent     |
| Performance of the MICE diagnostic systems     | Paolo Franchini |
| Phase space evolution in flip mode             | Paul Jurj       |
| Phase space evolution in solenoid mode         | Tom Lord        |
| Phase space evolution with the wedge           | Craig Brown     |
| Multiple coulomb scattering in liquid hydrogen | Gavriil Ch      |
| Multiple coulomb scattering with fields on     | Alan Young      |

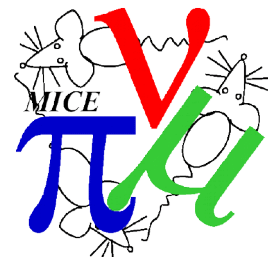
- System performance paper
  - Needs another read through and cross-checking the wording
  - Slow progress

# Scattering analysis



- LiH scattering
  - Best effort basis
  - Quite some progress over the summer – 4 iterations
  - Another referee's meeting
    - Systematic effect in TOF01 selection due to Bethe Bloch Curve
      - Momentum offset between empty and full
    - Discussion on systematic effects in momentum measurement
      - e.g. comparison TOF01 vs TOF12
      - e.g. comparison MC vs data
    - Discussion of acceptance and transmission effects
- LH2 scattering
  - Validation of detector performance (MC vs data)
  - Preparing for PID routines

# Scattering analysis

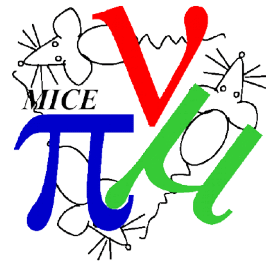


|  | LiH field-on | LH2 Field-off | Field-on |
|--|--------------|---------------|----------|
| Beam selection                                   | Green        | Green         | Green    |
| TOF Momentum Reconstruction                      |              | Green         | Green    |
| PID  |              | Grey          | Green    |
| Convolution analysis                             |              | Orange        | Orange   |
| Deconvolution analysis                           |              | Red           | Red      |
| Bias due to inefficiency/geometrical acceptance  |              | Red           | Red      |
| Validation/analysis of all data sets and MC      |              | Green         | Red      |
|  |              |               |          |
| Systematic uncertainty analysis                  | Green        | Red           | Red      |
| Time-of-Flight and Momentum                      |              | Orange        | Red      |
| Positional Alignment of trackers                 |              | Red           | Red      |
| Fiducial selection                               |              | Red           | Red      |
| TOF uncertainty                                  |              | Red           | Red      |
| Rotational alignment of trackers                 |              | Orange        | Red      |
| LH2 curvature                                    |              | Red           | Red      |
| Pion Contamination                               |              | Orange        | Red      |
| Headline plots finalised                         | Green        | Red           | Red      |
|  |              |               |          |
| MICE Note written                                | Yellow       | Red           | Red      |
| Draft Paper written                              | Yellow       | Red           | Red      |
| Draft Paper through internal review              | Yellow       | Red           | Red      |
| Draft Paper through journal review (publication) | Red          | Red           | Red      |



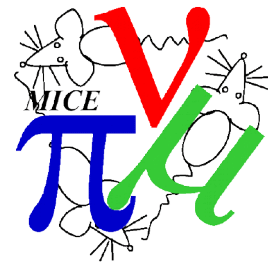
# Emittance analyses

---



- Flip mode
  - MC vs data now looks much better
  - Looking at angular momentum analysis
- Solenoid mode
  - Angular momentum studies ongoing
- Wedge
  - Looking at sources of systematic uncertainty in tracker reconstruction

# Emittance analyses

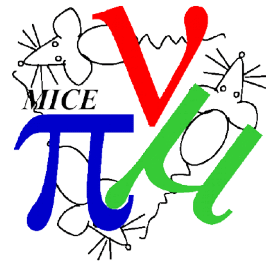


|  | Solenoid emittance evolution | Flip-mode emittance evolution | 6D emittance evolution |
|--|------------------------------|-------------------------------|------------------------|
| Beam selection                                       |                              |                               |                        |
| Beam resampling                                      |                              |                               |                        |
| Amplitude/emittance/density calculation              |                              |                               |                        |
| Angular momentum calculation                         |                              |                               |                        |
| Bias due to resolution/inefficiency (and correction) |                              |                               |                        |
| Validation/analysis of all data sets                 |                              |                               |                        |
|  |                              |                               |                        |
| Reconstruction uncertainty analysis                  |                              |                               |                        |
| Tracker density                                      |                              |                               |                        |
| Tracker alignment                                    |                              |                               |                        |
| Tracker field  |                              |                               |                        |
| TOF uncertainty                                      |                              |                               |                        |
| Model uncertainty analysis                           |                              |                               |                        |
| Beam alignment                                       |                              |                               |                        |
| Fields (SS and FC)                                   |                              |                               |                        |
| Absorber   |                              |                               |                        |
| Headline plots finalised                             |                              |                               |                        |
|  |                              |                               |                        |
| MICE Note written                                    |                              |                               |                        |
| Draft Paper written                                  |                              |                               |                        |
| Draft Paper through internal review                  |                              |                               |                        |



# Moving to papers

---



- Need to kick off refereeing process
  - Work up technical notes
  - Build referee committees
- Working still to a very challenging time line
  - Would be good to hear from the analysts – what jobs do they have left to do?