Introduction

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Reminder – Publication plan

Title	Contact	Target date		Comments
		Preliminary	Final	Jan-19
Phase-space density/emittance evolution; rapid communication	C. Rogers	Apr18 w/s	Apr19	4th referees meeting before around CM53 (21, 22Feb19, RAL)
Measurement of multiple Coulomb scattering of muons in lithium hydride	J. Nugent	Jun18; CM51	Apr19	Unfolding issues; perhaps resolved; CM53, 21,22Feb19, RAL
Performance of the MICE diagnostic systems	P. Franchini	Feb19; CM53		Almost complete draft
Phase-space density/emittance evolution review paper	C. Hunt	TBD		Analysis now advancing
Phase-space density/KDE/6D-emittance evolution	C. Brown	TBD		Thesis published on initial analysis; taken over by C.Brown
Measurement of multiple Coulomb scattering of muons in LH2	J. Nugent	TBD		Awaits completion of LiH paper
Field-on measurement of multiple Coulomb scattering	A. Young	TBD		Analysis underway
First particle-by-particle measurement of emittance in the Muon Ionization Cooling Experiment	V. Blackmore		Jun18, CM51	Accepted by EU Phys. J C; awaiting referees
The MICE Analysis and User Software framework	D. Rajaram	May18 w/s	Jun18, CM51	RAL-P-2018-007; 1812.02674; submitted to JINST; referees comments received

- Status as of CM53

Emittance Evolution

First observation paper

First demonstration of ionization cooling using the Muon Ionization Cooling Experiment

MICE collaboration

Muon beams of high brightness have the potential to carry the ... new phenomena in lepton-antilepton collisions to extremely high energy. Such beam... exploited to provide uniquely well-characterised neutrino beams. The muon beam ... through the decay of pions produced in the interaction of a proton beam with a targ... a high-brightness beam then requires that the phase-space volume occupied by th... duced (cooled). Ionization cooling is the novel technique by which it is proposed ... m. The Muon Ionization Cooling Experiment (MICE) collaboration constructed a ... ization cooling cell and used it to provide the first observation of ionization cooling ... the pioneering measurements made by the MICE collaboration. These results have sig... mplications for the future development of high-brightness muon beams for particle physics.

DRAFT – Not final version

- First reading of paper by referees
- Decision/revision of which plots should be included
- Discussion of wording and level of emphasis
- Aim for revised draft early May

Detailed emittance evolution

- Scope of the paper is huge
- Still working through MC and data basics
- Some discussion about splitting the paper into smaller chunks?

Wedge analysis

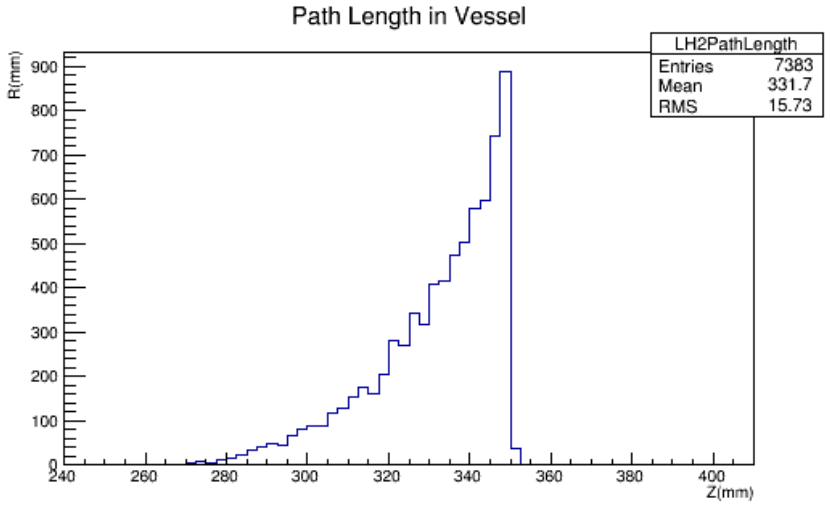
- Getting to grips with the analysis
  - Beam weighting/sampling
  - Phase space density or equivalent analysis
- Need to crystallise this into a full analysis loop
  - Sample selection
  - Detector resolution and efficiency
  - Systematic and Statistical uncertainties
  - Result

Scattering Analysis

LiH scattering (Nugent)

- Referee's meeting following CM53
- Updated momentum reconstruction using TOF12
  - How do we handle overflow bins (need p measurement)?
  - Is TOF2 efficiency an issue?
- Space angle deconvolution looks tricky
  - Does it add to the paper?
- Other niggles

LH2 scattering (Gavriil)



- Detailed analysis on path length estimation looks nice
  - Need to understand how this can be treated in the analysis
- Identified possible issue in alignment of detectors
  - Also identified in LiH analysis
  - Can this be resolved in detail – did we screw up the alignment procedure?
- Need to tackle Particle Identification
  - This will be “new physics” at high momentum – cannot use tracker vs TOF

Field-on scattering

- Should allow larger angles to be measured
- Can we move to a convolution or deconvolution analysis?
  - Sample selection
  - Detector resolution and efficiency
  - Systematic and Statistical uncertainties
  - Results

System Performance

System performance paper

- Too many plots to summarise!
- Are we ready to move to another version?
  - Consider releasing to referees?

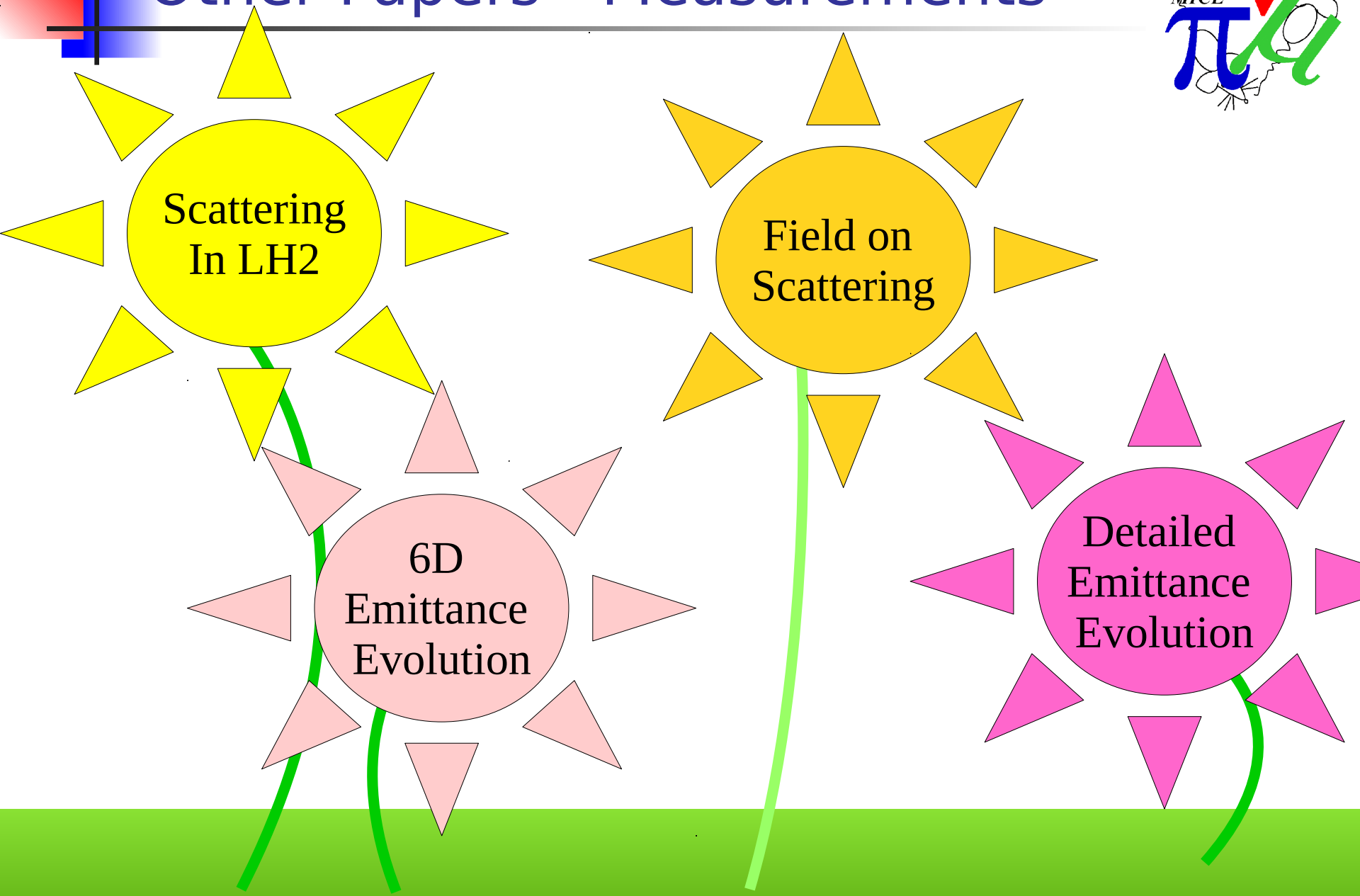
Energy loss analysis

- Most complicated “system performance” analysis
- May come in too late for system performance paper
  - Discuss finding a home in the detailed emittance evolution paper

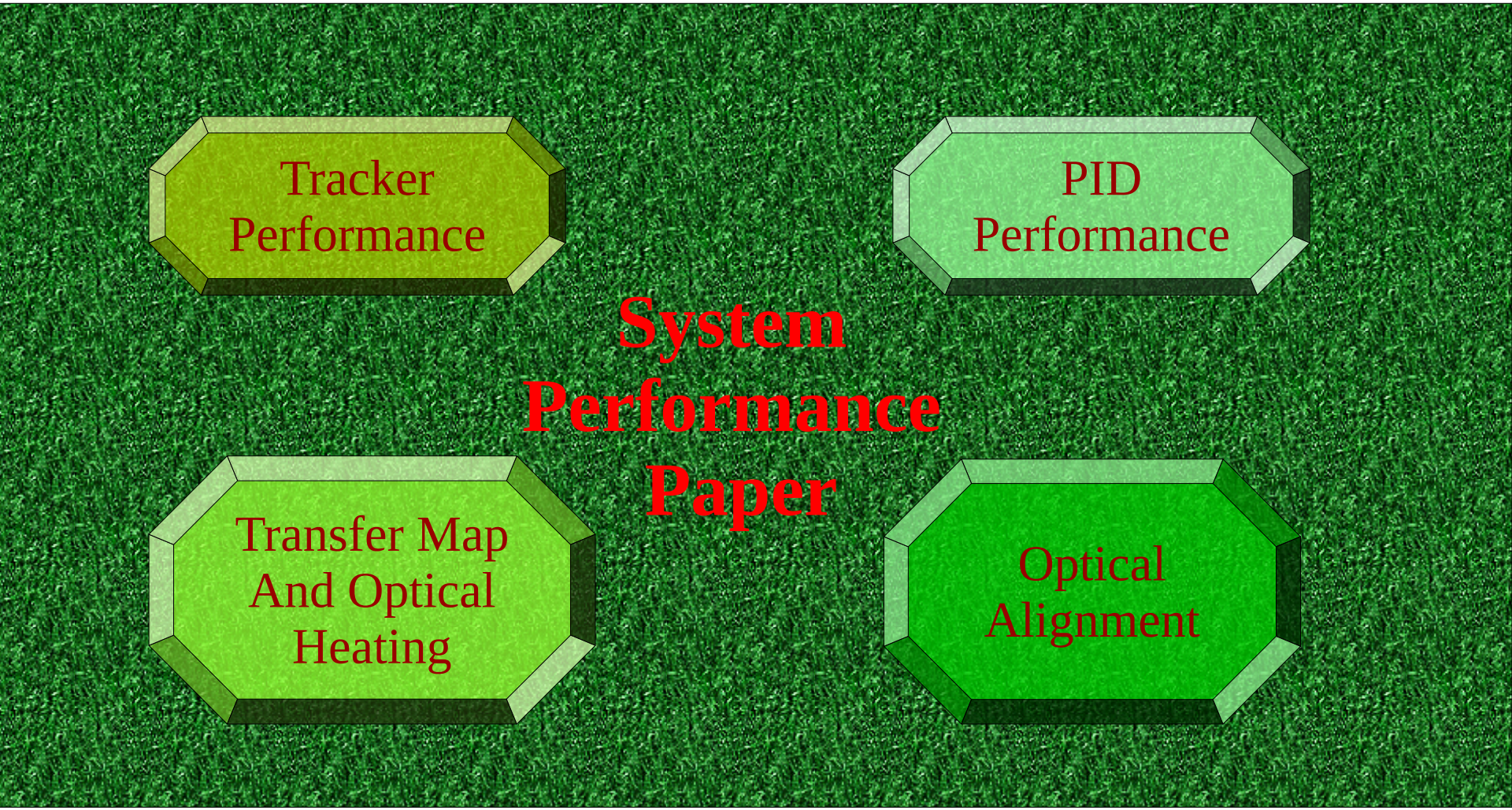
Optical alignment and aberrations

- Understanding the alignment of the optical system is important
- Understanding of the aberrations valuable theory
- In terms of MICE analysis, this is a source of systematic uncertainty
  - Need to understand where it fits in the prioritisation
  - Where is the study going? What are the conclusions?

Other Papers - Measurements



Other Papers and Techniques



Comments

- We have a **great data set**
- We have a **great analysis team**
- There are **great opportunities**

Now is the time to make it happen!