



# MAP Friday Meeting: *Systems Demonstrations*

Dan Kaplan

*IIT*

*Nov. 15, 2013*



# Outline

- Summary of SD Activities
- L2 Summary reports
- Topical Report
  - *Summary of MICE CM37,*  
Dan Kaplan, IIT, *et al.*

# Systems Demonstrations: Current Activities



- **MICE:**
  - (Spectrometer Solenoid 2 – delivered, 1 – cooldown)
  - Software development (on- and off-line)
  - Controls & Monitoring development
  - Data analysis and paper preparation (Step I Emitt. paper published, PID paper in prep)
  - Planning for MICE NSF proposal
    - Briefing at NSF HQ Tuesday
- **6DICE:**
  - Simulate emittance exchange study in MICE (dormant for now)
  - Define requirements for 6D cooling bench test
  - Evaluate muon sources for 6D cooling demonstration (nuSTORM, Milorad's AP0 idea)
  - Identify venues for collective-effects studies
  - Design matching section and detectors for 6D ICE

# Monthly L2 Status Report -

WBS: 04 01 – MICE

# 15 November 2013

Presenter:



<p><b><u>Milestone Status (Progress)</u></b></p> <ul style="list-style-type: none"> <li>• SS2 delivered to RAL R9</li> <li>• FC2 in cooldown</li> <li>• C&amp;M Integration Plan document &amp; Integrated QPS document</li> <li>• TIARA installation (including UMiss RF gear)</li> <li>• SW: Kalman track reconstruction now available             <ul style="list-style-type: none"> <li>– CAD-based beamline geometry under test</li> <li>– Batch reconstruction: reconstructed all data on the grid</li> <li>– Project plan with detailed task breakdown being developed</li> </ul> </li> </ul>	<p><b><u>Resource Conflicts, Plan Changes and Issues</u></b></p>
<p><b><u>Summary of Previous Month</u></b></p> <ul style="list-style-type: none"> <li>• EMR run successfully completed, took data for 4 “weekends”             <ul style="list-style-type: none"> <li>– completes MICE Step I</li> </ul> </li> <li>• QP for FC tested</li> <li>• FC1 training suspended</li> <li>• SS1 HTS lead failures</li> <li>• TIARA installation</li> <li>• “Emittance” paper published</li> </ul>	<p><b><u>Late Items</u></b></p>
<p><b><u>Upcoming Work (Next Month)</u></b></p> <ul style="list-style-type: none"> <li>• Complete C&amp;M Integration Plan document</li> <li>• Complete Integrated QPS document</li> <li>• C&amp;M tasks: HV, PA, UPSMon</li> <li>• TIARA test – goal: power by Dec 20</li> <li>• Repair Decay Solenoid leads</li> <li>• Train SS1</li> <li>• Install tracker in SS2</li> </ul>	<p><b><u>Quarterly Plans</u></b></p> <ul style="list-style-type: none"> <li>• Complete SS1 training &amp; mapping</li> <li>• Complete FC2 training &amp; mapping</li> <li>• Complete TIARA tests</li> <li>• Get geometry into CDB</li> <li>• Complete PRY design, review, and procure</li> <li>• DS repair and QP commissioning</li> <li>• Integrate EMR reconstruction with MAUS</li> <li>• Ckov analysis and simulation</li> </ul>

[» Download PDF \(1,226 KB\)](#)[» View Article](#)

The European Physical Journal C  
October 2013, 73:2582,

[Open Access](#)

## Characterisation of the muon beams for the Muon Ionisation Cooling Experiment

D. Adams, D. Adey, A. Alekou, M. Apollonio, R. Asfandiyarov, J. Back, G. Barber, P. Barclay, A. de Bari, R. Bayes, V. Bayliss, R. Bertoni, V. J. Blackmore, A. Blondel, S. Blot, M. Bogomilov, M. Bonesini, C. N. Booth, D. Bowring, S. Boyd, T. W. Bradshaw, U. Bravar, A. D. Bross, M. Capponi, T. Carlisle, G. Cecchet, G. Charnley, J. H. Cobb, D. Colling, N. Collomb, L. Coney, P. Cooke, M. Courthold, L. M. Cremaldi, A. DeMello, A. J. Dick, A. Dobbs, P. Dornan, S. Fayer, F. Filthaut, A. Fish, T. Fitzpatrick, R. Fletcher, D. Forrest, V. Francis, B. Freemire, L. Fry, A. Gallagher, R. Gamet, S. Gourlay, A. Grant, J. S. Graulich, S. Griffiths, P. Hanlet, O. M. Hansen, G. G. Hanson, P. Harrison, T. L. Hart, T. Hartnett, T. Hayler, C. Heidt, M. Hills, P. Hodgson, C. Hunt, A. Iacifano, S. Ishimoto, G. Kafka, D. M. Kaplan, Y. Karadzhov, Y. K. Kim, D. Kolev, Y. Kuno, P. Kyberd, W. Lau, J. Leaver, M. Leonova, D. Li, A. Lintern, M. Littlefield, K. Long, G. Lucchini, T. Luo, C. Macwaters, B. Martlew, J. Martyniak, S. Middleton, A. Moretti, A. Moss, A. Muir, I. Mullacrane, J. J. Nebrensky, D. Neuffer, A. Nichols, R. Nicholson, J. C. Nugent, Y. Onel, D. Orestano, E. Overton, P. Owens, V. Palladino, R. B. Palmer, J. Pasternak, F. Pastore, C. Pidcott, M. Popovic, R. Preece, S. Prestemon, D. Rajaram, S. Ramberger, M. A. Rayner, S. Ricciardi, A. Richards, T. J. Roberts, M. Robinson, C. Rogers, K. Ronald, P. Rubinov, R. Rucinski, I. Rusinov, H. Sakamoto, D. A. Sanders, E. Santos, T. Savidge, P. J. Smith, P. Snopok, F. J. P. Soler, T. Stanley, D. J. Summers, M. Takahashi, J. Tarrant, I. Taylor, L. Tortora, Y. Torun, R. Tsenov, C. D. Tunnell, G. Vankova, V. Verguilov, S. P. Virostek, M. Vretenar, K. Walaron, S. Watson, C. White, C. G. Whyte, A. Wilson, H. Wisting, M. S. Zisman [hide](#)

[» Download PDF \(1,226 KB\)](#)[» View Article](#)

### Abstract

A novel single-particle technique to measure emittance has been developed and used to characterise seventeen different muon beams for the Muon Ionisation Cooling Experiment (MICE). The muon beams, whose mean momenta vary from 171 to 281 MeV/c, have emittances of approximately 1.2–2.3  $\pi$ mm-rad horizontally and 0.6–1.0  $\pi$ mm-rad vertically, a horizontal dispersion of 90–190 mm and momentum spreads of about 25 MeV/c. There is reasonable agreement between the measured parameters of the beams and the results of simulations. The beams are found to meet the requirements of MICE.



# Monthly L2 Status Report -

WBS: 04.02 – 6D Cooling Demonstration

15 November 2013  
Presenter: Pavel Snopok



<p><b><u>Milestone Status (Progress)</u></b></p> <ul style="list-style-type: none"><li>• Feasibility Phase I through FY15:<ul style="list-style-type: none"><li>– Development of a plan for a MAP 6D cooling bench test.</li><li>– Close coordination with D&amp;S and TD activities.</li><li>– Development of a suite of experimental options.</li><li>– Report during FY15.</li></ul></li></ul>	<p><b><u>Resource Conflicts, Plan Changes and Issues</u></b></p>
<p><b><u>Summary of Previous Month</u></b></p> <ul style="list-style-type: none"><li>• Milorad presented his idea on how to get a muon beam at APO with minimal disruption to the g-2 program providing <math>10^8</math> muons/s with momentum centered at 300 MeV/c</li><li>• 6D ICE design discussion is ongoing</li></ul>	<p><b><u>Late Items</u></b></p>
<p><b><u>Upcoming Work (Next Month)</u></b></p> <ul style="list-style-type: none"><li>• Continue matching section and detector design/simulation work</li></ul>	<p><b><u>Quarterly Plans</u></b></p> <ul style="list-style-type: none"><li>• Continue exploring muon/proton beam options</li><li>• Have a first draft detector design and simulation running based on the nuSTORM beam</li></ul>