

Precision Measurements working group

WG organizer:

K. Minamisono (MSU)
M. Brodeur (Notre Dame)
R. Ringle (MSU)

Participation:

13 oral presentations, ~ 40 participants

The group covers wide range of areas in nuclear physics and employs variety of experimental techniques.

Physics covered:

- Fundamental symmetries tests
- Nuclear Astro physics
- Nuclear structure

Experimental technique:

- decay station (SuN), tape station
- laser spectroscopy
- multi-pass time-of-flight mass spectrometry
- penning trap mass spectrometry
- beta-energy calorimeter
- beta-decay angular correlation
- laser trap
- Paul trap
- optical single atom detection

Precision Measurements Working Group

Low Energy Community Meeting 2016 at University of Notre Dame
August 12, 2016 14:00 - 15:30

Program

14:00-14:06	Decay experiments using SuN detector A. Dombos (NSCL/MSU)
14:06-14:12	Beta-decay using Paul-Trap N. Scielzo (LLNL)
14:12-14:18	Precision measurements at the University of Notre Dame M. Brodeur (Notre Dame)
14:18-14:24	Precision superallowed measurements at TIUMF/ISAC K. Leach (Colorado School of Mines)
14:24-14:30	Extreme ultraviolet spectroscopy of Na-like ions A. Lapierre (NSCL/MSU)
14:30-14:36	Laser spectroscopy on ${}^8\text{B}$ P. Müller (ANL)
14:36-14:42	Pulsed laser technique for laser spectroscopy at BECOLA D. Garand (NSCL/MSU)
14:42-14:48	Mass measurements at LEBIT R. Ringle (NSCL/MSU)
14:48-14:54	Status of CHIP-TRAP at CMU M. Redshaw (CMU)
14:54-15:00	The University of Notre Dame MR-ToF B. Schultz (Notre Dame)
15:00-15:06	Optical single atom detection J. Singh (NSCL/MSU)
15:06-15:12	Ra EDM using atom trap M. Dietrich (ANL)
15:12-15:18	${}^6\text{He}$ beta-decay energy spectrum and weak magnetism X. Huyan (NSCL/MSU)
15:18-15:30	Discussion

Assignment from FRIB EC

- high-priority rare isotopes that should be produced?
 - stopped beams?
 - Xe and above, especially Fr
 - light mass elements ($Z = 3 \sim 18$) from cyclotron stopper
 - intense alkali/alkali earth beams (e.g. Ra) from solid target, etc.
 - very exotic neutron- and proton- rich nuclei
- experimental equipment available for first experiments?
 - at FRIB (~2020)?
 - EUV spectrometer (with NIST or Clemson Univ.) (X-ray spectroscopy)
 - LEBIT/SIPTrap (mass)
 - BECOLA/CRIS (laser spectroscopy)
 - Decay spectroscopy station/system/traps
 - ORISS
- other questions/concerns for the FRIB facility or other working groups?
 - General ion source for stable beams as reference beams for stopped experiments
 - Parallel running capability (fast/stopped/ReA3) using a He-gas jet, solid target or, some ion source
 - Purification of stopped beams; stable, molecular, radioactive isobar/isomer contaminant
 - More space for stopped beam experiments

Precision Measurements

Priority Physics

Covers wide range of physics
and not specify here

Beams we want

- Xe and above, especially Fr
- light mass elements ($Z = 3 \sim 18$) from
cyclotron stopper
- intense alkali/alkali earth beams (e.g. Ra)
from solid target, etc.
- very exotic neutron- and proton- rich nuclei

Available Equipment at FRIB

- EUV spectrometer with NIST or Clemson
Univ. (absolute charge radius)
- LEBIT/SIPTrap (mass measurement)
- BECOLA/CRIS (laser spectroscopy)
- Decay spectroscopy station/system/traps
- ORISS (mass measurements)

DAQ requirements?

Use individual DAQ system