

Update on the EPIC proposal @ ISOLDE

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The EPIC proposal @ ISOLDE

Exploiting the Potential of ISOLDE at CERN

- 1. Take advantage of LIU upgrades: proton BOOSTER energy and intensity increase**
→ Gain a factor of 1-20 in radioactive beam intensity
- 2. Install additional target station(s): allow parallel beams**
→ double the beam time for an increasing amount of users
(more than 80 accepted experiments, typically 30 new per year coming)
- 3. Install a 'Storage Ring' for short-lived (low-energy) isotopes – unique worldwide**
→ new opportunities in atomic, nuclear and fundamental (new) physics
- 4. A new experimental hall** (new experiments coming – mostly low-energy for searching new symmetries/interactions)
 - **MIRACLS** (ultrapure beams)
 - **PUMA** (interactions between exotic matter/anti-matter)
 - **Set-up/Trap for RaF molecules** (eEDM and other symmetry violations)
 - **Large superconducting magnet** for materials studies
 - **VITO + IDS** (decay spectroscopy of polarized beams)
 - **Applications, others ...**

Update

- Two workshops have been held in 2019 and 2020 (over 100 attendees at each meeting).
 - 18 presentations over two days
 - Potential new experimental synergies between ISOLDE, AD and nTOF.
 - Research requirements for 2D and Quantum Materials
 - Upgrades to existing facility (beam dumps, parallel operation, MR-TOF)
 - Preliminary concepts for a new hall presented.
- Next step
 - Collect all of this information into a single document we can point to and present to funding bodies and policy makers.

EPIC Special Topics Outline

Introduction – Major components of the EPIC proposal

The Scientific goals driving the EPIC proposal

Present and future experimental methodologies to answers the research questions

Benefits and challenges for ISOLDE using a higher intensity and higher energy proton beam.

New Ion beam production and purification systems

A New Experimental hall for Low-energy experiments

Upgrades of the HIE-ISOLDE accelerator and experimental set-ups

Conclusions and timeline

Writing team leaders and coordination

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Coordinating Board

Dinko Atanasov
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Alex Obertelli
Jose Alberto Rodriguez
Sebastian Rothe
Erwin Siesling

Support: Jennifer Weterings

Status and Timeline

- January
 - Established coordinating board
 - Two meetings
 - Submitted outline to EPJ Special Topics
- February
 - Teams to start writing and communicating with wider community
- April
 - Preliminary Draft distributed to wider ISOLDE community to enable wider engagement
- Late Spring-Early Summer
 - Final document ready for submission.