

1st ISOLDE-EPIC Workshop

Gerda Neyens

ISOLDE Collaboration Spokesperson

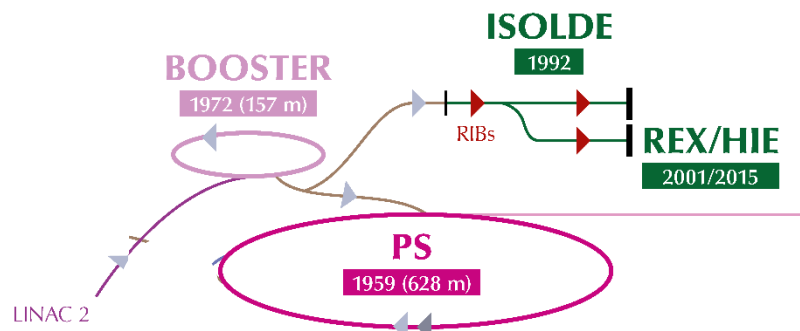
ISOLDE Physics Group Leader

CERN

Outline

- What is ISOLDE ?
- What is EPIC ?
- Goals of this workshop

a Radioactive Ion Beam (RIB) facility at CERN



~ 50% of Booster protons are used by ISOLDE

UNIQUE worldwide thanks to 1.4 GeV protons

More than 50 years of experience in production of radioactive isotopes

Since 2001: re-acceleration of RIB's with REX and HIE-ISOLDE (NC and SC Linac)

- > 1000 isotopes available already (of 3000 known) (60 keV – 10 MeV/u)
- > 70 different elements
- > 10 different permanent experimental set-ups (and new ones coming)
- More than 45 experiments for more than 500 users / year
(> 900 registered ISOLDE users from 43 countries)

EPIC

Exploiting the Potential of ISOLDE at CERN

The ISOLDE Collaboration input to ESPP update



Gerda Neyens, ISOLDE Collaboration Spokesperson
 Richard Catherall, ISOLDE Technical Coordinator (soon Joachim Vollaire)
 Bertram Blank, Chair of the ISOLDE Collaboration (soon Kieran Flanagan)
 Karsten Riisager, Chair of the ISOLDE and n-TOF (INTC) program committee

Take advantage of LHC Intensity Upgrades (LIU)

- Increase of p-intensity (x2)

❑ 1st GAIN FOR ISOLDE: **higher radioactive beam intensities (x2)**

How to cope with that ?

- ✓ Sebastian Rothe (targets)
- ✓ Marco Calviani (beam dumps)

- Increase of PS-BOOSTER p-energy (1.4 to 2 GeV)

❑ 2nd GAIN FOR ISOLDE: **another gain in radioactive beam intensities (x0.8 – x 10)**

Talks:

- ✓ Wolfgang Bartmann (requirements to send 2 GeV to ISOLDE)
- ✓ Joao Pedro Ramos (impact on radioactive beam intensities)

Take advantage of LHC Intensity Upgrades (LIU)

- Combined proton intensity and energy increase
→ gain x1 to more than x20 RIB intensity

- ❑ 3th GAIN FOR ISOLDE: allows for **parallel beam operation** by installing **additional target stations** and new **improved RIB beam purification installations**

Talk:

- ✓ Joachim Vollaire (extending irradiation capabilities)
- ✓ Thierry Stora (parasitic irradiations for RIB production)
- ✓ And several Posters

- Double available RIB beam times !
- Provide purer RIB beams for high-precision measurements!
- Allow for more and new experiments to come !

Upgrade REX-ISOLDE

- Provide extended accelerated beam properties (as required by users)

Talks:

- ✓ Alberto Rodriguez (technical)
- ✓ Joakim Cederkall (physics)

Posters:

- ✓ ISS experiments (D. Sharp, S. Bennet)
- ✓ Miniball (T. Kroll)
- ✓ HIE-ISOLDE Superconducting Recoil Separator (I. Martel)

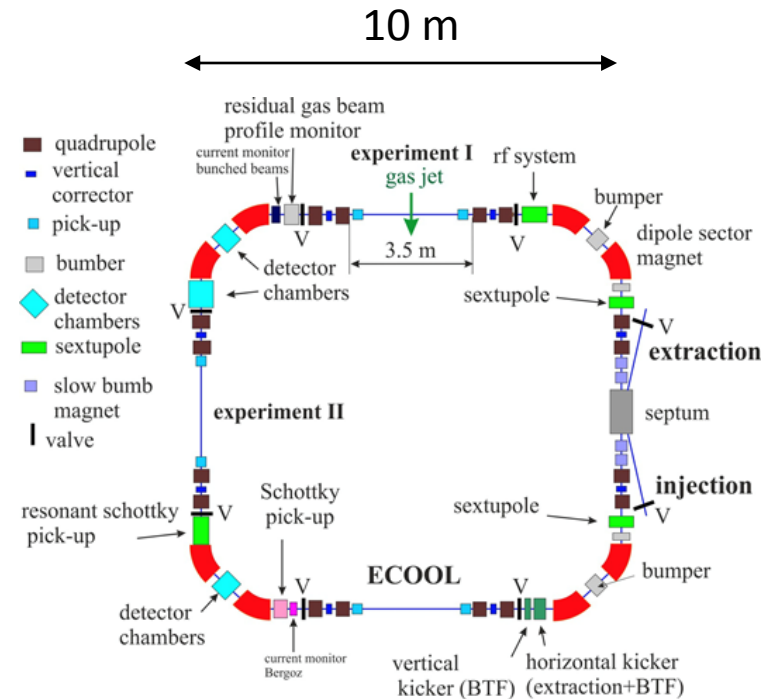
A new compact storage ring

- Stored radioactive beams have many advantageous

- ❑ Uniqueness: injection at the required energy (fast – shorter lifetimes accessible)
- ❑ Can be used multiple times in an in-ring detector (luminosity increase!)
- ❑ Can be cooled to deliver excellent quality beams to external experiments for high-precision studies

Talks:

- ✓ Manfred Grieser (a new design)
- ✓ Yuri Litvinov (physics)



A new experimental hall for new exps.

- Several new low-energy experimental set-ups in preparation or proposed (posters)

- ☐ **GANDALF** (atomic spectroscopy of radioactive elements)
- ☐ **MIRACLS** (ultrapure beams production and laser spectroscopy) V. Lagaki
- ☐ **MR-TOF** (for beam characterization and purification) M. Vilen
- ☐ **PUMA** (interactions between exotic matter and antiprotons) F. Wienholtz
- ☐ **MULTIPAC** (Large superconducting magnet for PAC for materials studies)
- ☐ **Trap for RaF molecules** (eEDM and other symmetry violations)

- Space for new HIE-ISOLDE set-ups (posters)

- ☐ **ISOLDE Storage Ring (ISR)**
- ☐ **HIE-ISOLDE Superconducting Recoil Separator (HISRS)** I. Martel

Goals of this workshop

- Initiate thinking and discussions on the future of ISOLDE
- Set-up working groups based on parallel sessions
- Prepare goals and timeline for conceptual / technical design reports (including physics cases)
- Prepare fund raising for sub-projects

Parallel Sessions

Wednesday from 16.15 till 17.15 – make your choice, be there !

Opportunities
with **low-energy
beams**

Room B

Magda Kowalska

Opportunities
with **HIE-ISOLDE
beams
(+Storage Ring)**

Room C

Liam Gaffney

HI-SRS
Working group

Room D

Ismael Martel

Applications of
RIB's (solid state,
biochemistry,
irradiations,
medical, ...)

ISOLDE meeting
room

Karl Johnston

Technical
Working group
(design, layout,
pre-studies, ...)

Council chamber

Joachim Vollaire

At 17.15: all back to Council Chamber

Short report from each working group by the conveners (5-10' each)

Practicalities

- POSTER SESSION - this evening 17.45 – 19.15
 - put your posters up during the coffee break !
- Workshop PHOTO - tomorrow immediately after first session
 - In council chamber !