

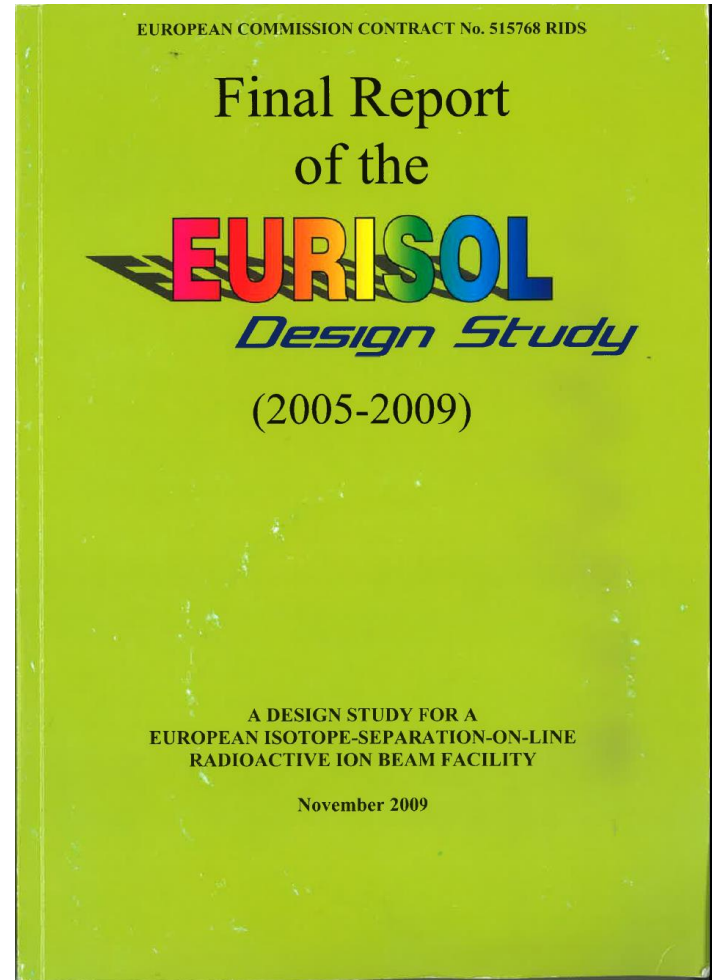
2008 - 2012

**People
Highlights**

How I met ISOLDE



Bjorn Jonson



Peter Butler
Mats Lindroos

Coordinators



Alex Herlert (2008 – 2010)



Karl
Johnston



Magda Kowalska (2010-2012)

Fellows



Thomas Cocolios

Magda Kowalska
Jarno Van De Walle
Deyan Yordanov
Janne Pakarinnen
Thomas Cocolios
Jan Kurcewicz
Susanne Kreim
Elisa Rapisarda



Alex Gottberg

Students



Tom Proctor

Gry Tveten

Sara Naimi

Kara Lynch

Tom Proctor

Hans Tornqvist

Monika Stachura

Christophe Sotty

Robert Wolf

Kim Kreim

Frank Wienholz

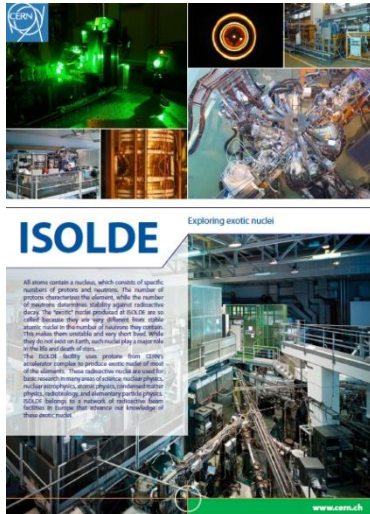


Sara Naimi

Associates and Long Term Visitors



Bjorn Jonson
Piet Van Duppen
Phil Walker
Kieran Flanagan
Henry Stroke
Jens Roeder
Guilherme Correia



.....

**AND JENNY WETERINGS WITHOUT
WHOM WE WOULD ALL BE LOST...**

2 Conferences organized: EURORIB'10 in Lamoura
and HFI-NQI 2010 at CERN

Thanks to the BE and EN teams

**TISD: Molten metal targets; Vadis Ion Source,
nano materials**

RILIS: Solid state lasers, new schemes

Continuous improvement of reliability of REX

HIE-ISOLDE

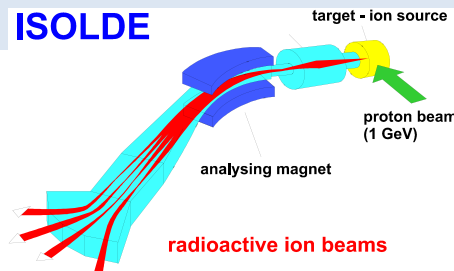


New opportunities in the Physics landscape at CERN:
Workshop 10 – 13 May 2009

Research Board December 2009: «The Research Board endorses the recommendation of the INTC to approve the project HIE-ISOLDE, on account of its scientific potential as well as of its several unique features in the field of the ISOL ion facilities.

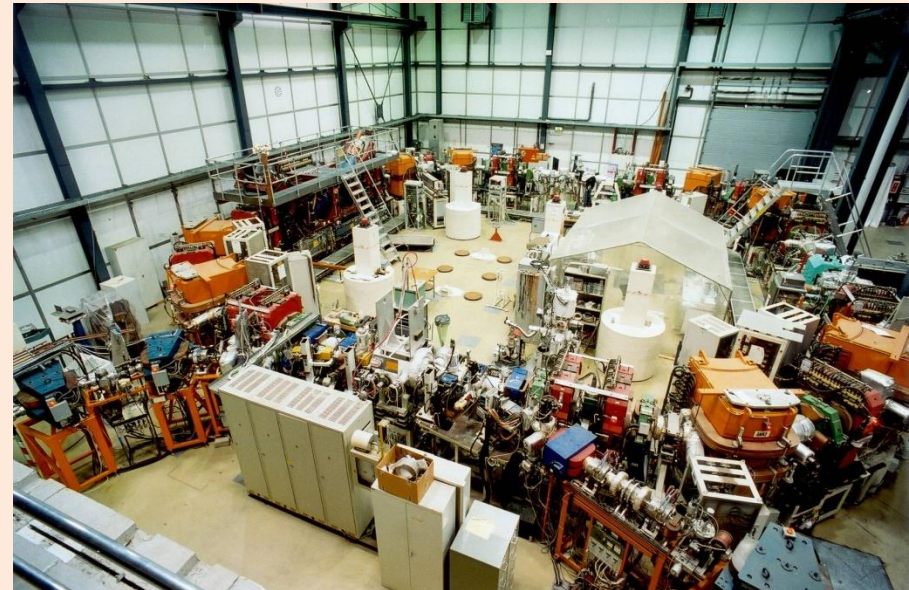
Welcome to the ISOLDE workshop 2009

- HIE ISOLDE is now a CERN project thanks to the tireless efforts of all of you.
- We welcome Yacine Kadi as Project Leader
- A steering committee will be put in place
- We have signed an MOU with SINP and VECC Kolkata and are preparing agreements with LNL/SPES, GANIL/SPIRAL2 and SKKU, Korea
- First beams at 5.5A MeV for 2013
- Beams at 10A MeV for 2014
- The funding scheme is not yet complete
- Special INTC session with call for LOIs in June 2010.



TSR @ HIE-ISOLDE

- **TSR**
 - Explore possibility to bring storage ring to ISOLDE.
 - **Workshop held in Heidelberg** November 2010
 - Physics cases:
 1. Half-life measurements of ^7Be in different atomic charge states
 2. Capture reactions for astrophysical p-process
 3. Nuclear structure through transfer reactions
 4. Long-lived isomeric states
 5. Atomic effects on nuclear half-lives
 6. Di-electronic recombination on exotic nuclei
 7. Neutrino physics



CRIS beamline

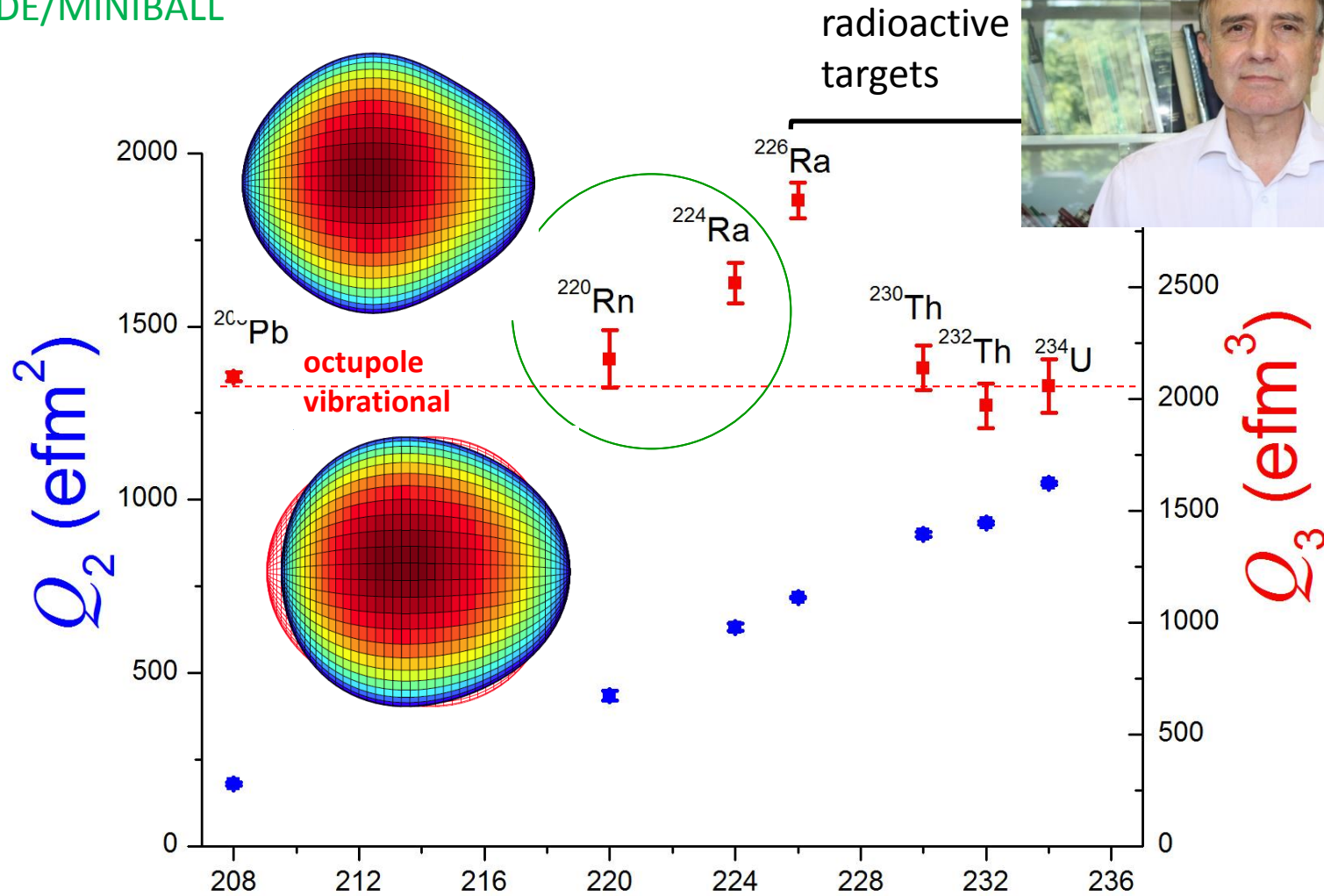


- The CRIS beam line facility at ISOLDE
 - Laser spectroscopy: spin and moments from parent nucleus
 - Decay spectroscopy: level scheme from daughter nucleus
- This allows for spectroscopy measurements to be performed on pure ground state or isomeric beams



Pear Shaped Nuclei: The best laboratory to search for finite EDM?

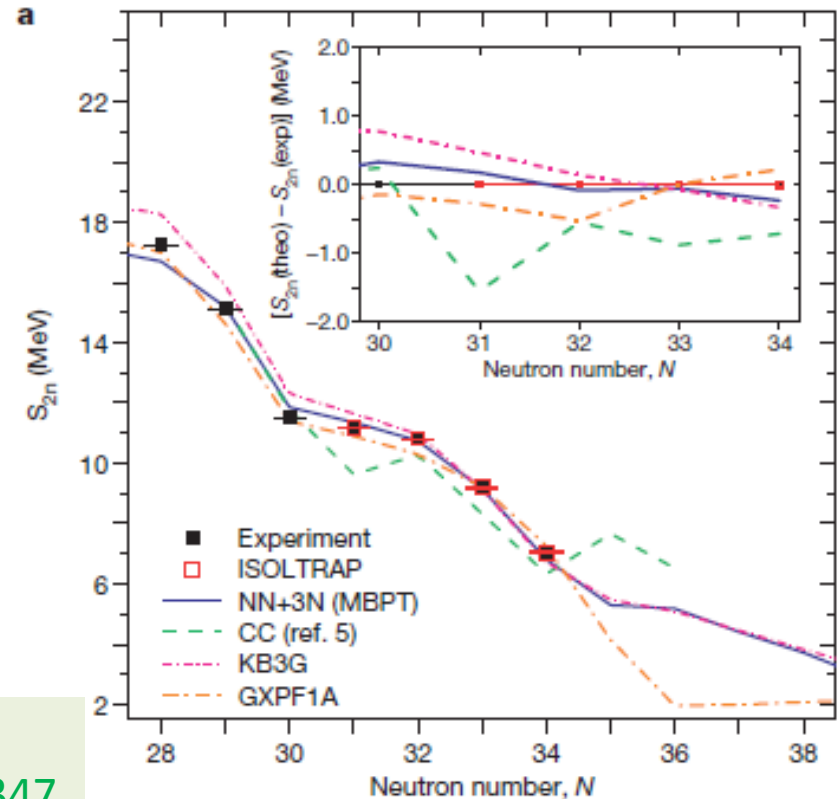
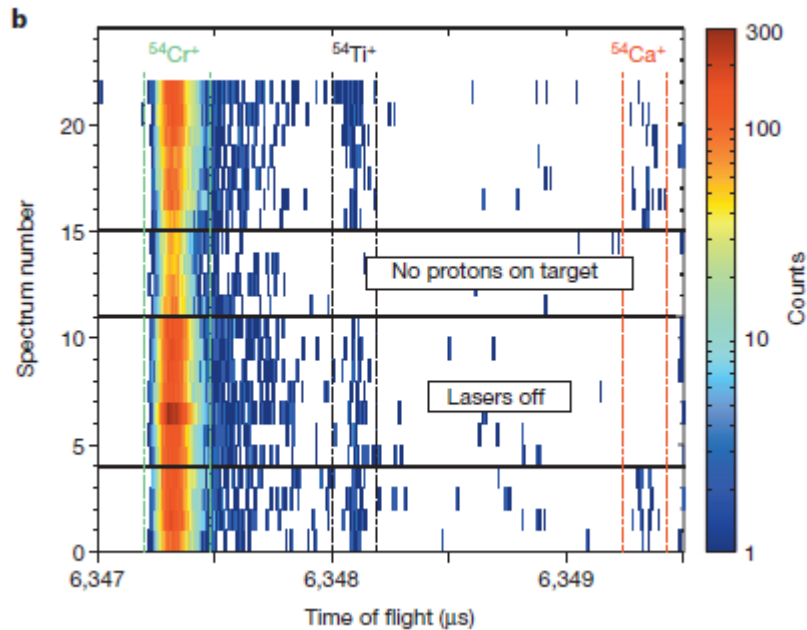
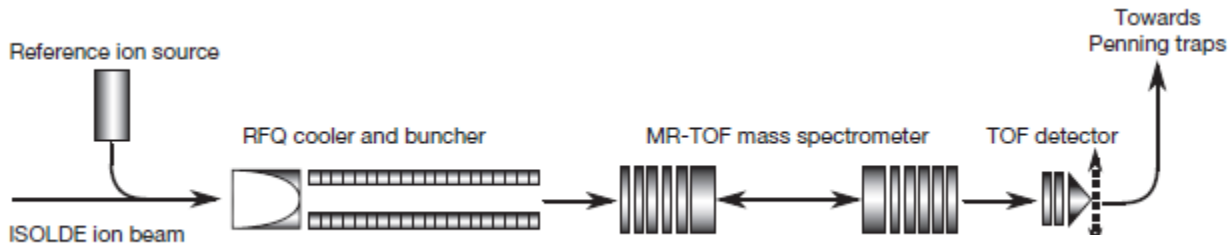
L.P. Gaffney et al., Nature 497 (2013) 199
ISOLDE/MINIBALL



At Cern, the European laboratory for particle physics, it's no longer just about the Large Hadron Collider (LHC) and the Higgs boson. Last year's discovery has left the scientists there a little deflated because the Higgs has turned out to be a boring, just-as-they-predicted kind of particle. The nucleus of the radium atom, on the other hand, is much more interesting. THE NEW STATESMAN, 14 June 2013 (British Humour?)

New Magic numbers

The example of N=32



ISOLTRAP/ISOLDE-CERN

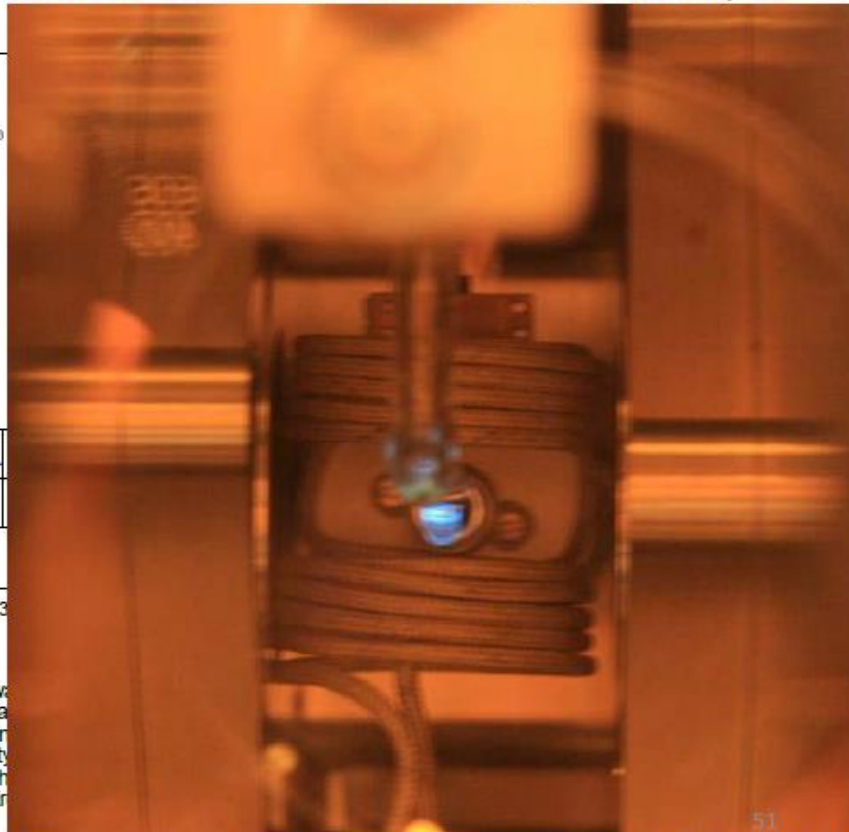
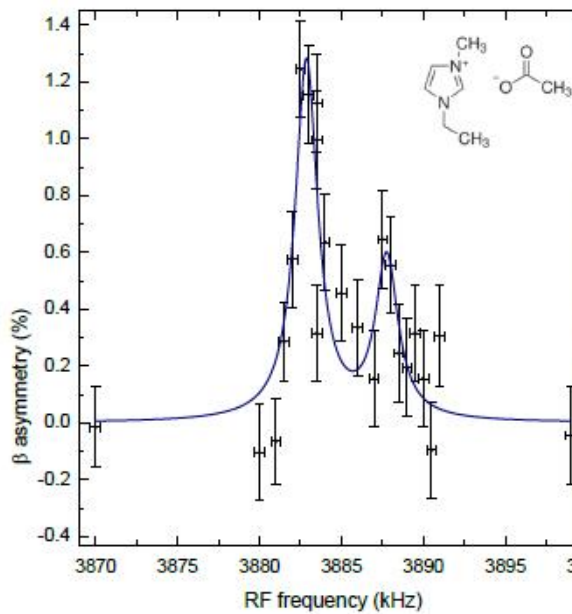
F. Wienholtz et al., Nature 498(2013) 347

Beta-NMR in liquids



$^{31}\text{Mg}^+$ implanted into an ionic liquid (EMIM-Ac):

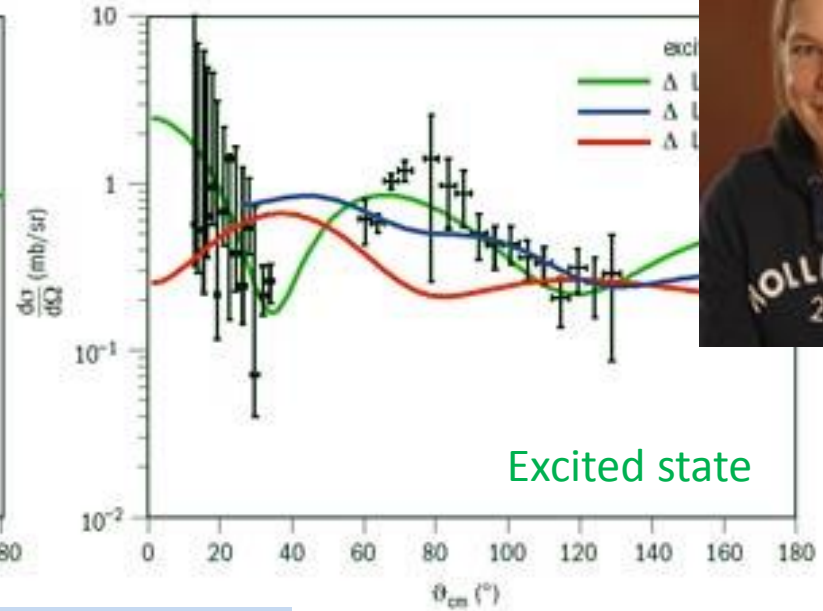
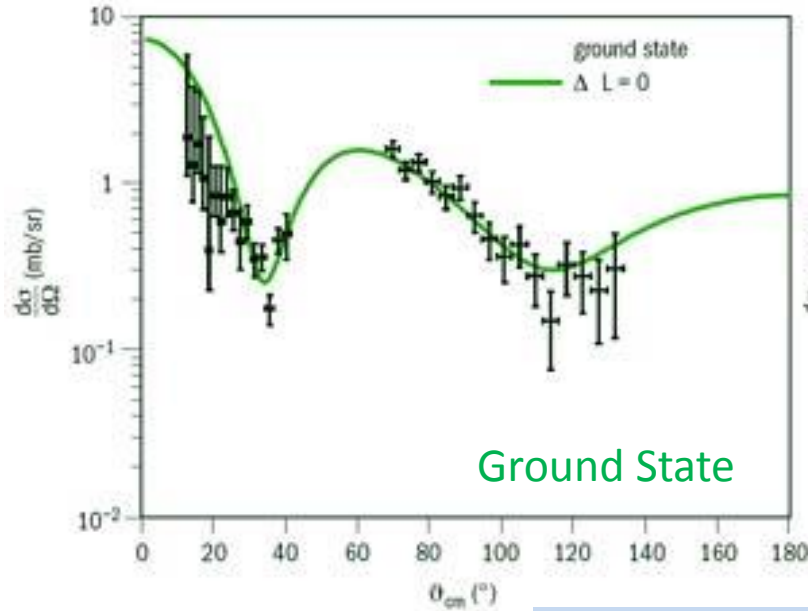
Differential pumping and drop
Mounted @ COLLAPS experiment



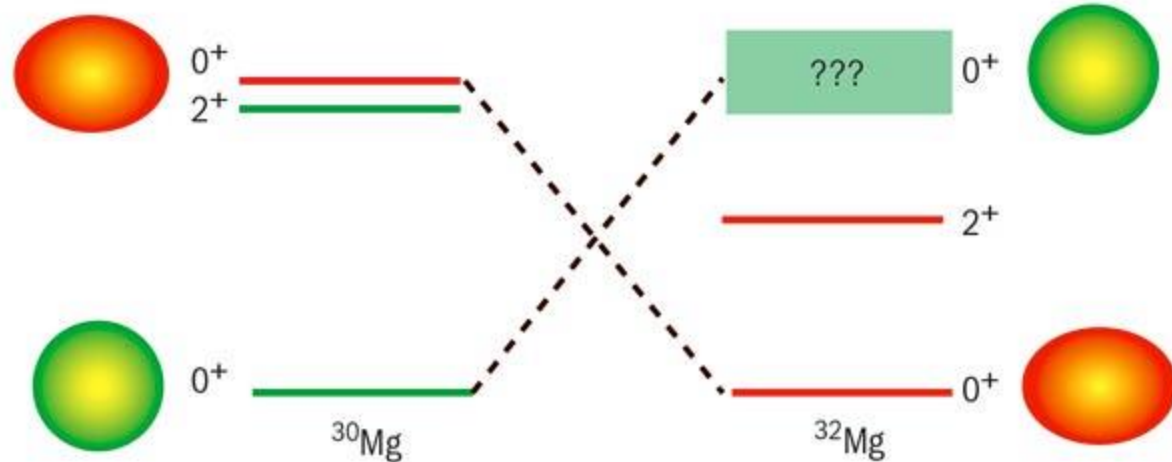
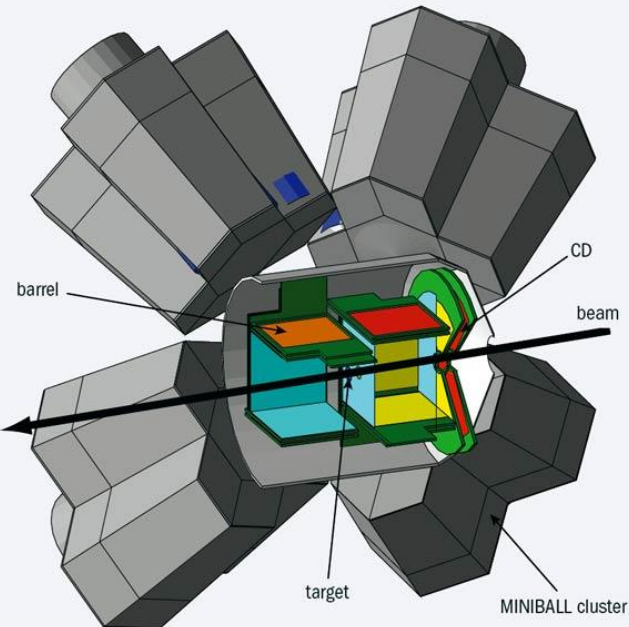
Monika Stachura, University of Copenhagen; Magdalena Kowalska, CERN, Geneva; Alexander Gottberg, CSIC, Madrid; Klaus Blaum, Planck Institute for Nuclear Physics, Heidelberg; Gerda Neyens, Leuven University, (Leuven); Rainer Neugart, Mainz University (Mainz); Deyan Yordanov, Max Planck Institute for Nuclear Physics, Heidelberg; Mark Bissell, Leuven University, (Leuven); Kim Krut'ko, Planck Institute for Nuclear Physics, Heidelberg

Search for the second 0^+ state in ^{32}Mg through $^{30}\text{Mg} (t,p) ^{32}\text{Mg}$

Angular Distributions



Miniball + TREX at ISOLDE



K. Wimmer et al., PRL 105 252501 (2010)

Beta-delayed fission

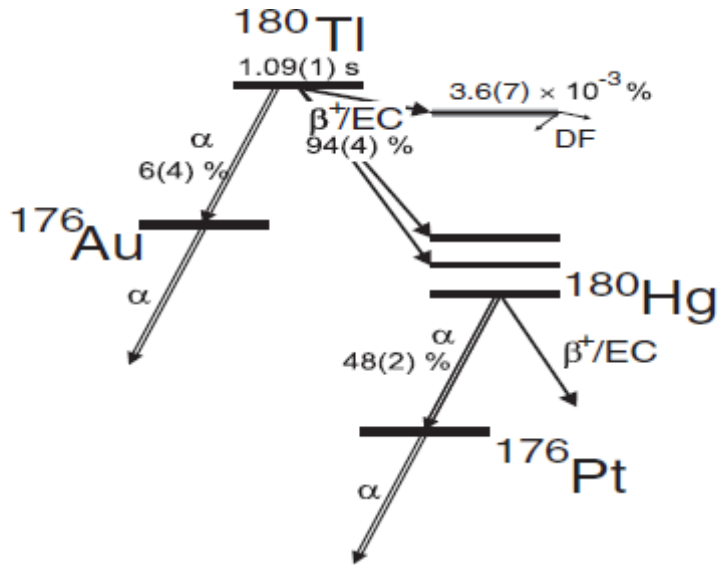


FIG. 3. A simplified decay scheme of ^{180}Tl with deduced half-life and branching ratios for its various decay modes. The 94(4)% β^+/EC decay branch of ^{180}Tl is shown schematically by arrows feeding excited states in ^{180}Hg ; those states in the vicinity of the fission barrier can undergo βDF .

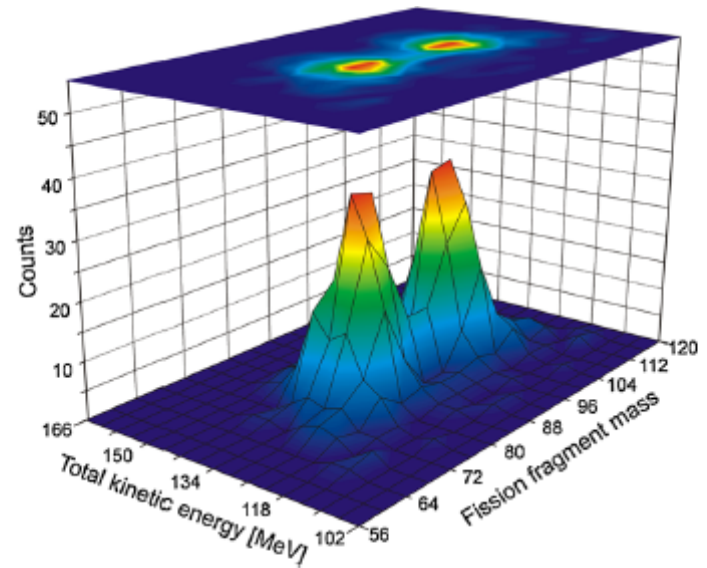


FIG. 4 (color online). The derived fission-fragment distribution of ^{180}Hg as a function of the fragment mass and the total kinetic energy.

A.N. Andreyev et al. PRL 105 (2010) 252102