

## CERN-ISOLDE

### *ISOLDE & n\_TOF Committee*

#### **Klaus Blaum**

INTC Chair (*from 1 Jan 2013 until 31 Dec 2015*)  
*[about 15-20 committee meetings at CERN per year]*

#### **Maria Borge**

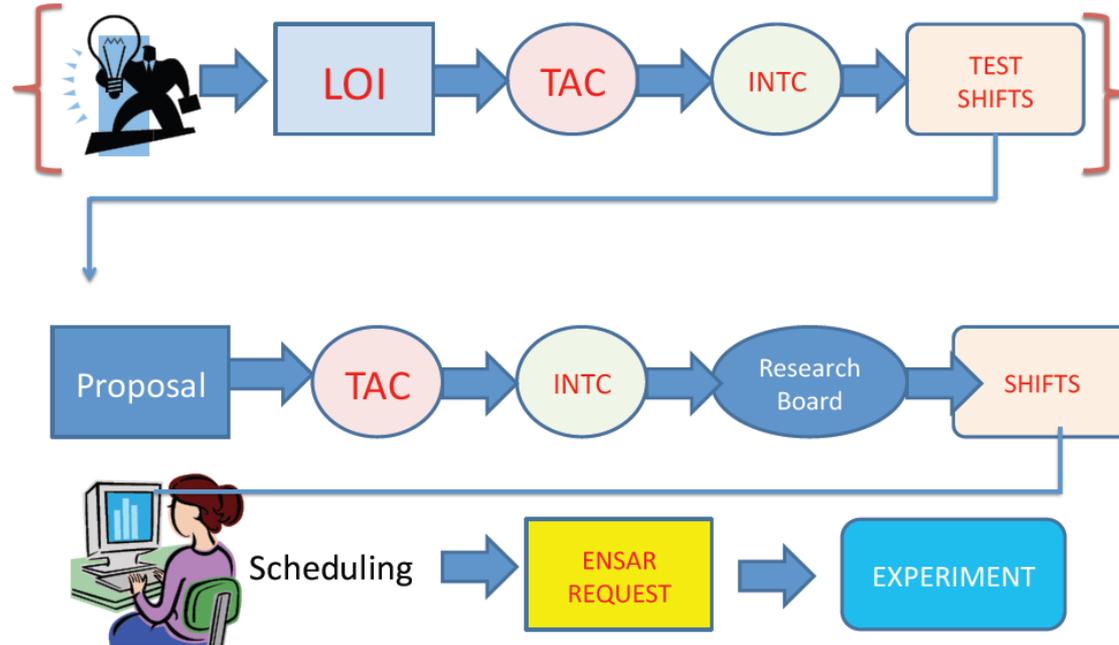
ISOLDE Group Leader and Spokesperson

#### **Magdalena Kowalska**

ISOLDE scientific coordinator and INTC scientific secretary

**Klaus Blaum, MPI for Nuclear Physics, Heidelberg  
for the INTC**

**Padua, October 16<sup>th</sup> 2013**



11 external members including chair

*N. Alahari, B. Blank, K. Blaum, M. Block, W. Catford, G. De Angelis, J. Dobaczewski, E. McGlynn, D. Ridikas, Z. Salman, J. Vaagen*

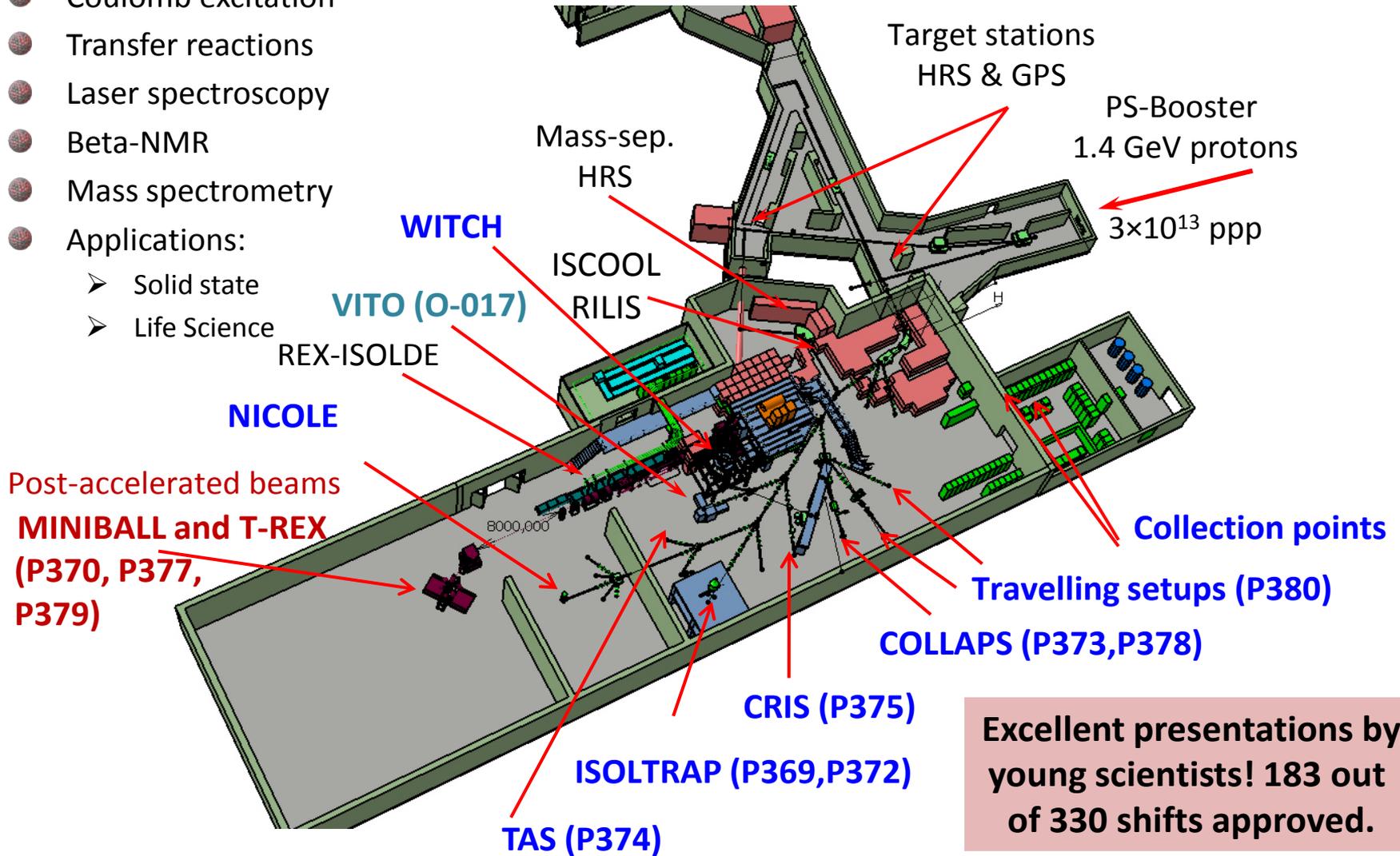
2 referees per proposal appointed 2-3 weeks before meeting; in special cases (bio-chem) external referees appointed

2013 meetings: 26-27 June and 23-24 Oct [47 prop/LOIs in 2013; 23 in 2009]

INTC recommends # of 8h shifts to Research Board – no priority

Maximum 6 pages for physics case of proposal

- Decay spectroscopy
- Coulomb excitation
- Transfer reactions
- Laser spectroscopy
- Beta-NMR
- Mass spectrometry
- Applications:
  - Solid state
  - Life Science



Excellent presentations by young scientists! 183 out of 330 shifts approved.

| Delivered              | 2012    | 2011    |
|------------------------|---------|---------|
| Protons                | 11.5e19 | 8.05e19 |
| All shifts (IS+LOI+MD) | 529     | 463.5   |
| Shifts for IS exp      | 416     | 313.5   |
| Shifts for LOIs        | 15.5    | 16      |
| REX shifts (IS +LOI)   | 221.5   | 190.5   |
| Average IS shifts/day  | 1.61    | 1.55    |

Physics programme was running until December 17, 2012

**Shifts balance** (2012 + June 2013)

- Low-energy IS experiments (including WITCH): 364.5 shifts + 88 (June13)
- Post-accelerated REX experiments: 216.5 shifts
- Approved for HIE-ISOLDE (Oct 2012): 429 shifts + 95 (June13)

**No physics runs in 2013!**

605 shifts to be discussed next week

|                                               |        |
|-----------------------------------------------|--------|
| Number of beam hours promised -full contract  | 5200   |
| Number of beam hours 01/09/2010 - 31/ 08/2013 | 6946.4 |
| Estimated number of Users - full contract     | 400    |
| Number of Users 01/09/2010 - 31/ 08/2013      | 352    |
| Estimated number of days - full contract      | 2800   |
| Number of days 01/09/2010 - 31/ 08/2013       | 2244   |
| Estimated number of projects - full contract  | 60     |
| Number of projects 01/09/2010 - 31/ 08/2013   | 75     |

**To be presented in detail by M. Kowalska tomorrow.**

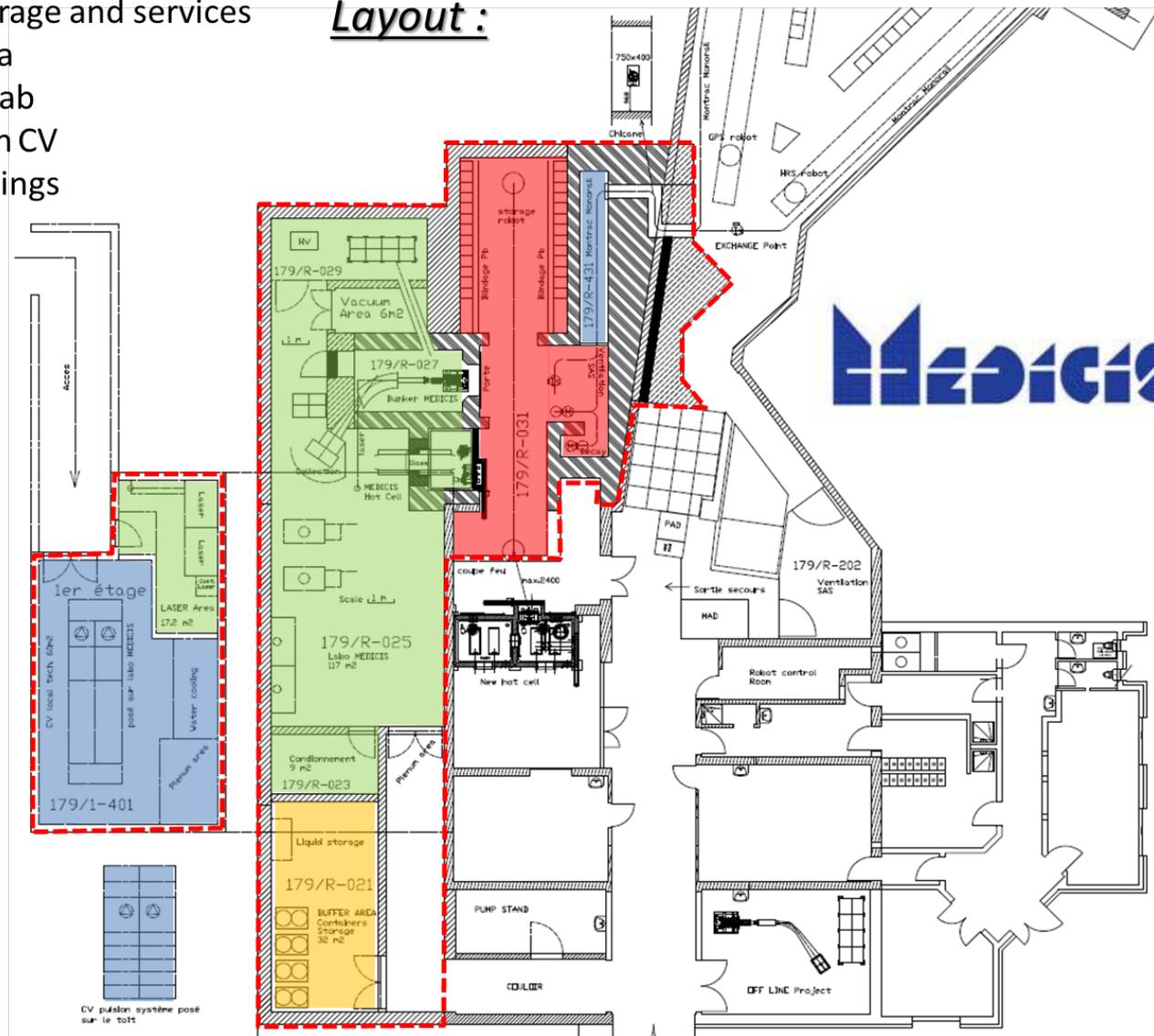
## Major ISOLDE upgrade

Extension of the ISOLDE hall → HIE-ISOLDE



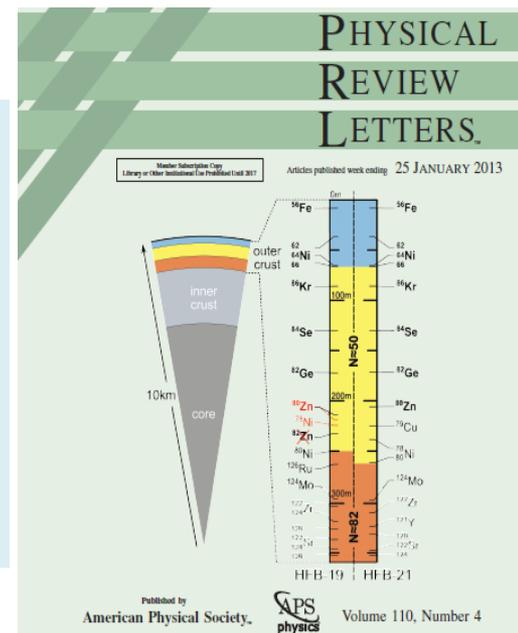
- Target Storage and services
- Buffer area
- MEDICIS Lab
- Ventilation CV
- New buildings

## Layout :





Numerous highlights have been published in journals like Nature and PRL, demonstrating the strong scientific contribution of ISOLDE to ENSAR!



## LETTER

doi:10.1038/nature12226



### Masses of exotic calcium isotopes pin down nuclear forces

F. Wienholtz<sup>1</sup>, D. Beck<sup>2</sup>, K. Blaum<sup>3</sup>, Ch. Borgmann<sup>3</sup>, M. Breitenfeldt<sup>4</sup>, R. B. Cakirli<sup>3,5</sup>, S. George<sup>1</sup>, F. Herfurth<sup>2</sup>, J. D. Holt<sup>6,7</sup>, M. Kowalska<sup>8</sup>, S. Kreim<sup>3,8</sup>, D. Lunney<sup>9</sup>, V. Manea<sup>9</sup>, J. Menéndez<sup>6,7</sup>, D. Neidherr<sup>2</sup>, M. Rosenbusch<sup>1</sup>, L. Schweikhard<sup>1</sup>, A. Schwenk<sup>7,6</sup>, J. Simonis<sup>6,7</sup>, J. Stanja<sup>10</sup>, R. N. Wolf<sup>1</sup> & K. Zuber<sup>10</sup>

The properties of exotic nuclei on the verge of existence play a fundamental part in our understanding of nuclear interactions<sup>1</sup>. Exceedingly neutron-rich nuclei become sensitive to new aspects of nuclear forces<sup>2</sup>. Calcium, with its doubly magic isotopes <sup>40</sup>Ca and <sup>48</sup>Ca, is an ideal test for nuclear shell evolution, from the valley of stability to the limits of existence. With a closed proton shell, the

effective field theory, there are only two undetermined low-energy couplings in chiral three-nucleon forces at leading and sub-leading orders. These are constrained by the properties of light nuclei <sup>3</sup>H and <sup>4</sup>He only, so that all heavier elements are predictions in chiral effective field theory. The present frontier of three-nucleon forces is located in the calcium isotopes, where the structural evolution is domi-

#### ARTICLE

Received 21 Aug 2012 | Accepted 27 Mar 2013 | Published 14 May 2013

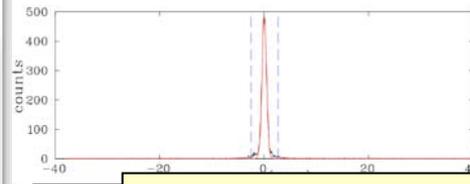
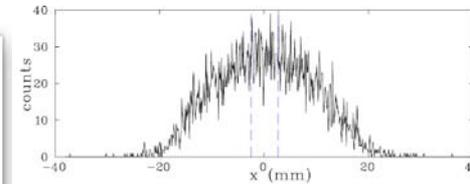
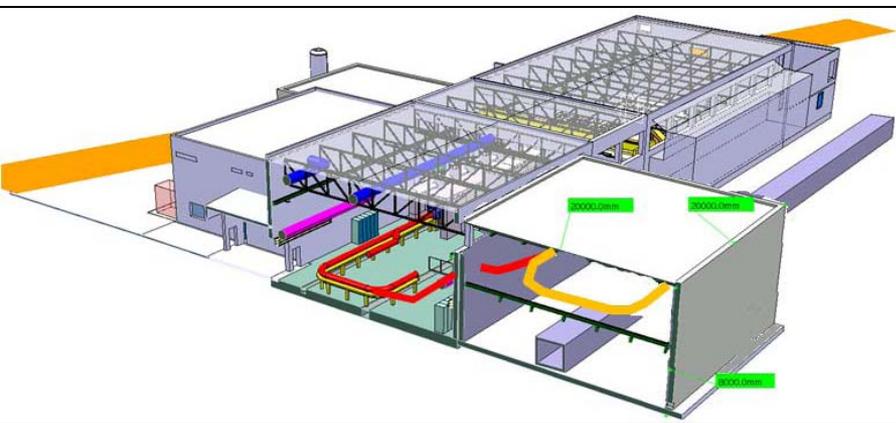
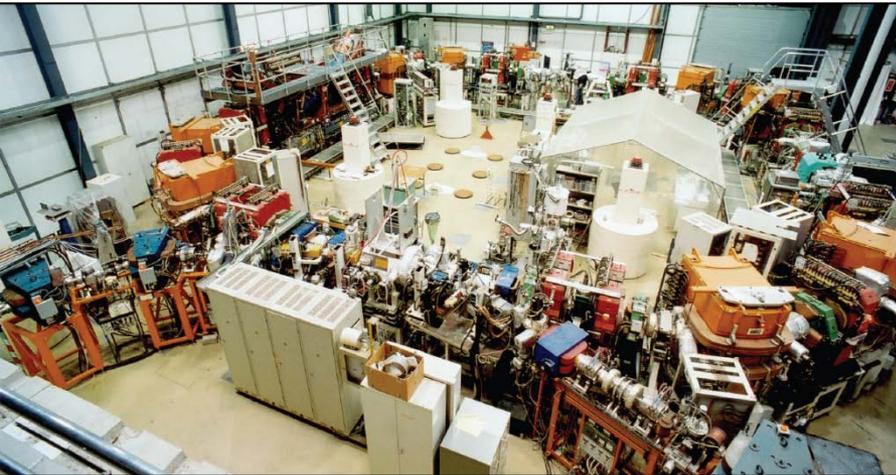
DOI: 10.1038/ncomms2819

OPEN

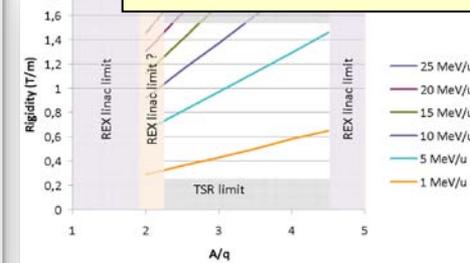
### Measurement of the first ionization potential of astatine by laser ionization spectroscopy

S. Rothe<sup>1,2</sup>, A.N. Andreyev<sup>3,4,5,6</sup>, S. Antalic<sup>7</sup>, A. Borschevsky<sup>8,9</sup>, L. Capponi<sup>4,5</sup>, T.E. Cocolios<sup>1</sup>, H. De Witte<sup>10</sup>, E. Eliav<sup>11</sup>, D.V. Fedorov<sup>12</sup>, V.N. Fedosseev<sup>10</sup>, D.A. Fink<sup>1,13</sup>, S. Fritzsche<sup>14,15,†</sup>, L. Ghys<sup>10,16</sup>, M. Huyse<sup>10</sup>, N. Imai<sup>1,17</sup>, U. Kaldor<sup>11</sup>, Yuri Kudryavtsev<sup>10</sup>, U. Köster<sup>18</sup>, J.F.W. Lane<sup>4,5</sup>, J. Lassen<sup>19</sup>, V. Liberati<sup>4,5</sup>, K.M. Lynch<sup>1,20</sup>, B.A. Marsh<sup>1</sup>, K. Nishio<sup>6</sup>, D. Pauwels<sup>16</sup>, V. Pershina<sup>14</sup>, L. Popescu<sup>16</sup>, T.J. Procter<sup>20</sup>, D. Radulov<sup>10</sup>, S. Raeder<sup>2,19</sup>, M.M. Rajabali<sup>10</sup>, E. Rapisarda<sup>10</sup>, R.E. Rossel<sup>2</sup>, K. Sandhu<sup>4,5</sup>, M.D. Seliverstov<sup>1,4,5,12,10</sup>, A.M. Sjödin<sup>1</sup>, P. Van den Bergh<sup>10</sup>, P. Van Duppen<sup>10</sup>, M. Venhart<sup>21</sup>, Y. Wakabayashi<sup>6</sup> & K.D.A. Wendt<sup>2</sup>

**TSR@ISOLDE: Collaboration: 129 scientists from 47 institutions in 19 countries**



**Beam cooling**



**Well matched**

*Precision studies in:*  
 Nuclear reactions  
 Nuclear astrophysics  
 Ground state properties  
 Atomic Physics

**Approved by RB;  
 integration study  
 submitted.**

Emiliano Piselli, Erwin Siesling, Fredrik Wenander

## **ISOLDE is doing extremely well!**

The facility obtained world-leading results in the last running period.

Highest visibility of ISOLDE in the international community. Excellent education of young scientists.

New upgrades guarantee leading roles in the respective fields of research.

TSR@ISOLDE would bring new physics and new users to ISOLDE.

Excellent support in many respects by CERN and ENSAR is appreciated!

**Thanks a lot for your attention.**