

Status of the

# ISOLDE DECAY STATION - IDS

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# Collaboration

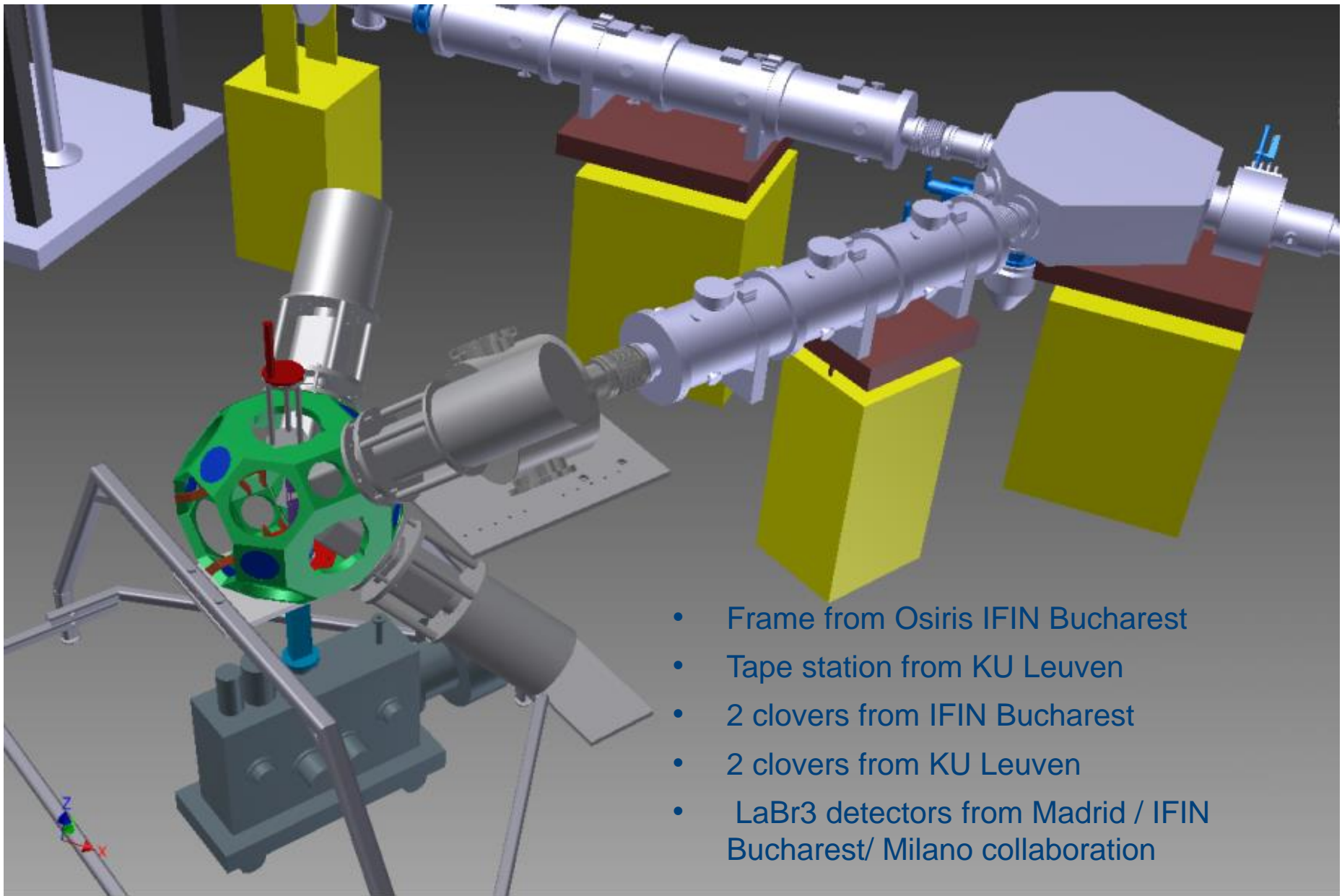
- Belgium (KU Leuven)
- Denmark (Aarhus University, Department of Physics and Astronomy)
- Finland (University of Jyväskylä)
- France (CEN Bordeaux-Gradignan; IPHC Strasbourg; LPC Caen; LPSC Grenoble; Institut de Physique Nucléaire - Orsay - IN2P3/CNRS and Université Paris Sud; Institut Max von Laue – Paul Langevin - ILL)
- Germany (Institut für Kernphysik - TU Darmstadt; Institut für Kernphysik - Universität zu Köln; Ludwig-Maximilians-University München - Faculty of Physics; TU München)
- Poland (NCBJ BP1)
- Romania (IFIN-HH Bucharest)
- Spain (CIEMAT Madrid; IEM-CSIC Madrid; IFIC-CSIC Valencia; UCM Madrid)
- Sweden (Lund University – Physics Department)
- Switzerland (ISOLDE)
- UK (STFC Daresbury Laboratory; University of Liverpool; University of Manchester; University of Surrey; University of York)

# Collaboration

- **Past meetings:**

- Workshop on a New Decay Station at Isolde, October 3, 2012, ISOLDE – CERN
- IDS steering committee meeting, August 27, 2013, telephone conference
- IDS collaboration meeting, October 21, 2013, ISOLDE - CERN

- More information can be found at: <http://fys.kuleuven.be/iks/ns/ids>



- Frame from Osiris IFIN Bucharest
- Tape station from KU Leuven
- 2 clovers from IFIN Bucharest
- 2 clovers from KU Leuven
- LaBr3 detectors from Madrid / IFIN Bucharest/ Milano collaboration





# List of approved IDS experiments

- Study of octupole deformation in n-rich Ba isotopes populated via  $\beta$  decay (IS579)
- Core breaking and octupole low-spin states in  $^{207}\text{Tl}$  (IS588)
- Characterization of the low-lying  $0^+$  and  $2^+$  states of  $^{68}\text{Ni}$  (IS590)
- Beta-3p spectroscopy and proton-gamma width determination in the decay of  $^{31}\text{Ar}$  (IS577)
- Beta-decay study of neutron-rich Tl and Pb isotopes (IS584)

# Current status

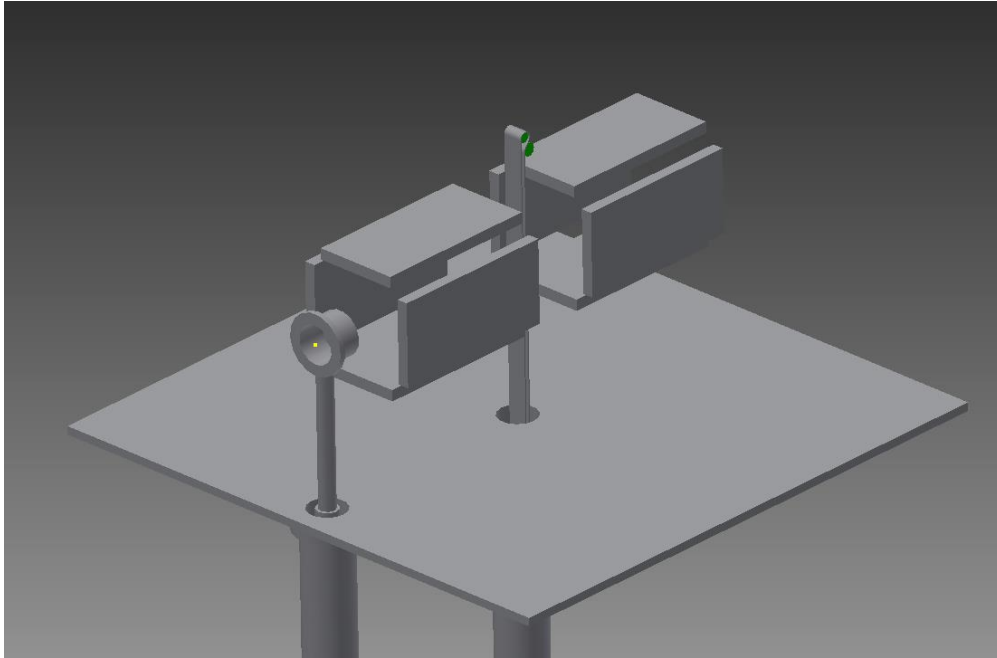
- Infrastructure works are finished (Electricity, Network, LN<sub>2</sub> Autofill).
- Beamline completed and aligned. Beam transport tests started.
- Holding structure and HPGe clover detectors are mounted.

## Major concerns

- Beam transport.
- Digital DAQ system not yet in place (Nutaq VHS-ADCs used at JYFL, using Daresbury firmware, MIDAS user interface. Data analysis software GRAIN)

# Future

- Electron Spectroscopy (design University of York)



- Neutron spectroscopy: coupling IDS with Vandle  
( $\beta$ -delayed neutron spectroscopy of  $^{130-132}\text{Cd}$  isotopes ; proposal M. Madurga)



**Thank you for your attention!**

# IS579

## Study of octupole deformation in n-rich Ba isotopes populated via $\beta$ decay

- Spokesperson: G. Benzoni (Univ. Milano) , H. Mach (NCBJ, Poland)
- Physics
  - $^{150-151-152}\text{Cs}$   $\beta$  decay
  - Octupole deformations expected in the low-lying states
- Set-up
  - UCx target with standard surface ionizer
  - Fast plastic scintillator, 5 LaBr<sub>3</sub>(Ce) detectors and 4 HPGe Clover detectors
  - Fast timing,  $\gamma$ - $\gamma$  coincidences

# IS588

## Core breaking and octupole low-spin states in $^{207}\text{Tl}$

- Spokesperson: Z. Podolyak (Univ. Surrey)
- Physics
  - Low-spin level structure of the  $^{207}\text{Tl}$
  - Breaking of the neutron or proton core
  - Collective octupole phonon coupled to the single proton hole
- Set-up
  - Molten Pb target
  - 4 HPGe Clover detectors + 1 Miniball triple cluster + plastic scintillator

# IS590

## Characterization of the low-lying $0^+$ and $2^+$ states of $^{68}\text{Ni}$

- Spokesperson: C. Sotty (KU Leuven) , L. Fraile (Univ. Madrid)
- Physics
  - Detailed spectroscopic data of the low-spin states of  $^{68}\text{Ni}$  (triple pairs of  $0^+$  /  $2^+$  states)
  - Gamma branching ratios of the  $0^+$  and  $2^+$  states and E0 transition strength.
- Set-up
  - UCx target, neutron converter and RILIS
  - $\beta$  decay of  $^{68}\text{Mn} - ^{68}\text{Fe} - ^{68}\text{Co} - ^{68}\text{Ni}$
  - Fast plastic detector, 5 LaBr<sub>3</sub>(Ce) detectors and 4 HPGe Clover detectors
  - $\gamma$ - and electron spectroscopy, fast-timing

# IS577

## $\beta$ 3p spectroscopy and proton- $\gamma$ width determination in the decay of $^{31}\text{Ar}$

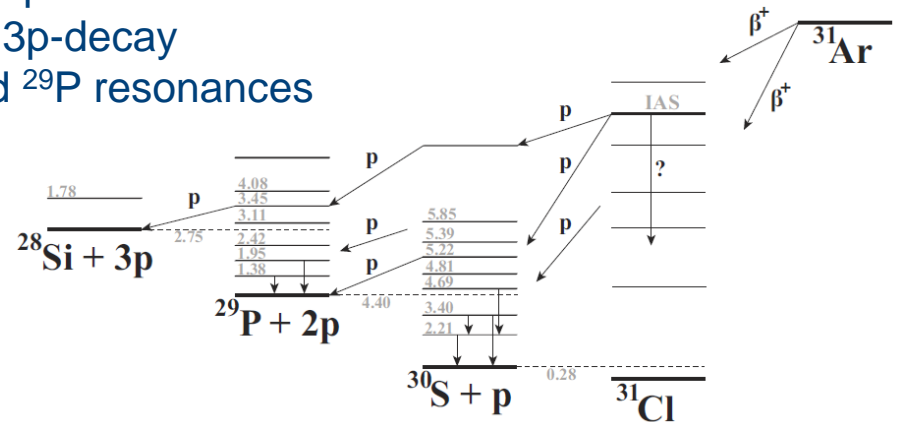
- Spokesperson: H. O. U. Fynbo, G.T. Koldste (Aarhus University)

- Physics

- Detailed study of the beta decay of the dripline nucleus  $^{31}\text{Ar}$ .
- Allow detailed study of the beta-delayed 3p-decay
- Provide important information on  $^{30}\text{S}$  and  $^{29}\text{P}$  resonances

- Set-up

- CaO target
- Custom built chamber hosting an array of 6 DSSSD (70%  $\Omega$ )
- HPGe: 4 Clover detectors + 1 Miniball triple cluster



# IS579

## Beta-decay study of neutron-rich Tl and Pb isotopes

- Spokesperson: A Gottardo (INFN, Legnaro), E. Rapisarda (Isolde–CERN)
- Physics
  - Long-lived isomers in  $^{211, 213}\text{Tl}$  and  $\beta$  decay of  $^{211-215}\text{Tl}$
  - Long-lived isomers in  $^{213}\text{Pb}$
- Set-up
  - UCx target using RILIS, quartz line - LIST
  - 4 HPGe Clover detectors + 1 Miniball triple cluster + plastic scintillator