JYFL Accelerator News

Accelerator Laboratory, Department of Physics
University of Jyväskylä, Finland

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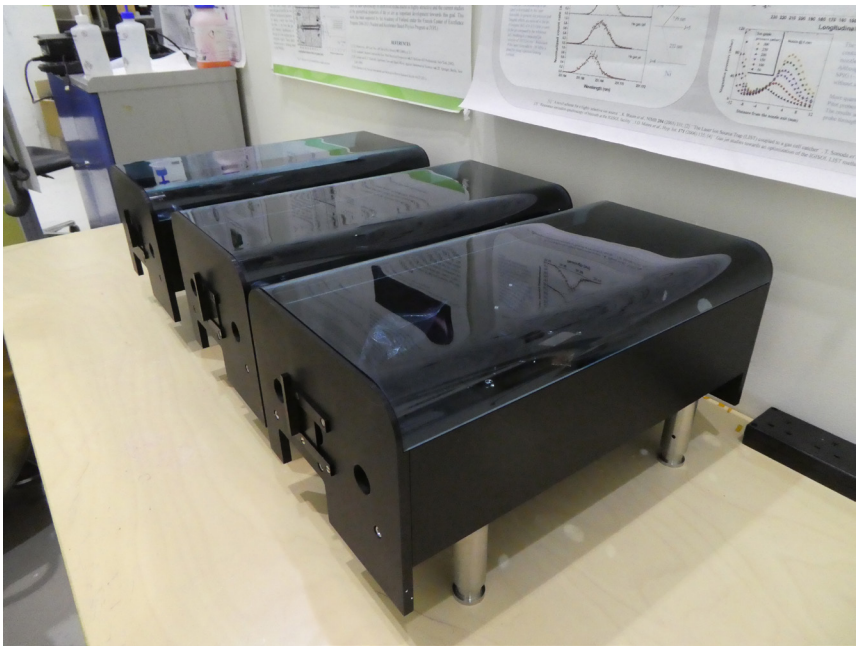
Next Call for Proposals
Deadline: March 15, 2017

Significant infrastructure funding granted by Academy of Finland

JYFL-ACCLAB was selected as one of the Research Infrastructures on the Roadmap 2014-2020 of the Ministry of Education and Culture, and has since been successful in securing competitive infrastructure funding via the Academy of Finland's FIRI program. The results of the latest call for applications were published on 19th January. JYFL-ACCLAB was awarded funding totalling 1.31M€, of which the Academy contribution is 0.92M€. The funding will be used to overhaul the vacuum system of IGISOL, to purchase germanium detectors for use at MARA and IGISOL, to develop a novel Auger electron spectrometer for use with the Helium Ion Microscope previously funded via FIRI and to equip beam lines for reaction studies. The funding granted will also allow procurement of an AGATA module, representing the Finnish contribution to the next generation gamma-ray tracking spectrometer.

MARA Low-Energy Branch: first infrastructure arrives

The MARA Low-Energy Branch (MARA-LEB), currently under development at JYFL-ACCLAB, will provide the isotopic selectivity required for the study of proton-rich nuclei which will be accessible with MARA. Infrastructure funding (FIRI), secured from the Academy of Finland at the end of 2015, has been used for the purchase of the first parts of the facility. Three state-of-the-art solid state Ti:Sapphire lasers (see picture) were delivered to JYFL from the University of Mainz in February 2017 and will be assembled by the IGISOL laser team. The tendering process for the vacuum system required for the gas cell and differential pumping stage has just been completed. Other components of the facility are currently in the design phase and we soon expect to make the order for the gas cell as well as the dipole magnet required for MARA-LEB.



Three newly-designed Ti:sapphire lasers delivered from the University of Mainz which will be used in connection with MARA-LEB.

MARA ready for physics

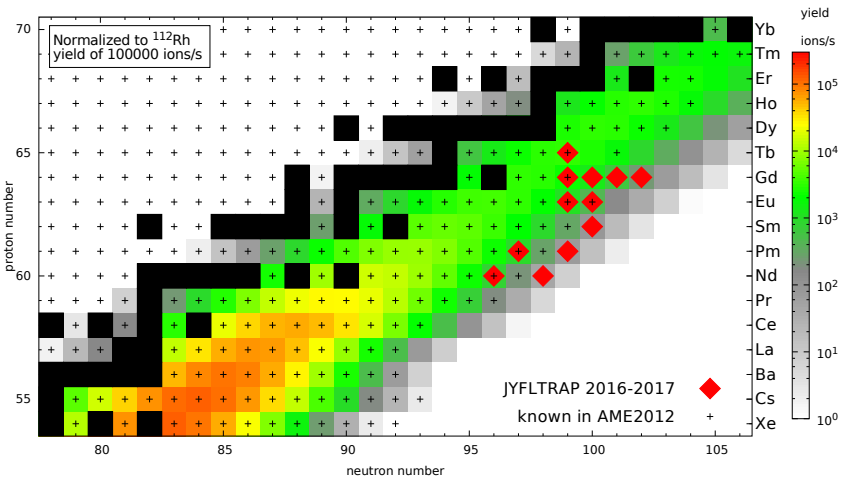
The participants of the MARA2017 workshop.

In the week before Christmas, the final part of the series of MARA commissioning experiments was completed. The focal plane instrumentation consisted of a Micron BB20 DSSD (0.67mm strip pitch, 192 x 72 strips), a MWPC, "punch-through" Si detectors behind the DSSD and four Clover germanium detectors. At the target position, a new version of the UoYTube charged-particle detector was installed. In total, 416 channels were instrumented in a fully-digital TDR data acquisition system based on Nutaq VHS-ADC cards. The new data acquisition system was operated independently of the original TDR DAQ which was in use for an experiment at RITU. The experiment used a beam of ^{58}Ni impinging on Cd and Sn targets to produce neutron-deficient alpha-active Pt and Os nuclei. MARA and the new instrumentation once again performed excellently.

On 1st-2nd February, a workshop MARA2017: Future in-beam program was held. The workshop was focussed on developing ideas for the physics program to be carried out using MARA coupled to the JUROGAM3 array of germanium detectors, which should be available in August 2018. The workshop was attended by over 40 participants and a significant number of proposals are expected to be submitted to the March 15th PAC deadline for this exciting physics program.

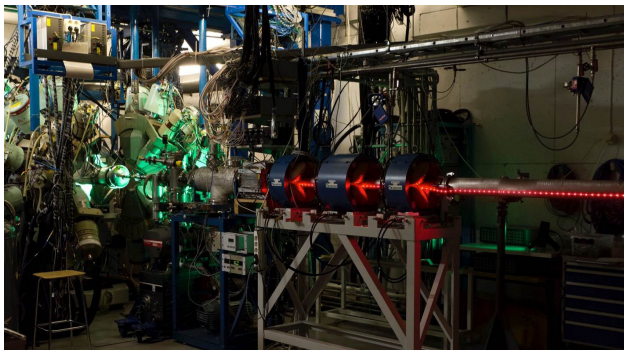
JYFLTRAP probes the extreme end of the fission fragment distribution available at IGISOL

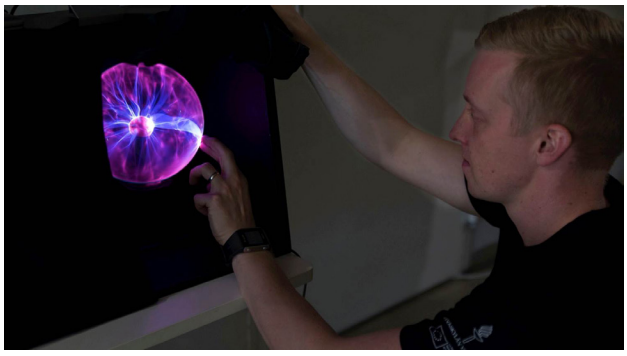
The mass measurement programme at the JYFLTRAP Penning trap has recently been extended to heavier fission fragments in the rare-earth region. The masses of these nuclei are relevant for probing possible onset of deformation in this mid-shell region and for understanding the formation of the rare-earth peak in the astrophysical rapid neutron capture process. Thanks to record-breaking transmissions of around 30% from the IGISOL focal plane to the detector after JYFLTRAP, several exotic nuclei with relatively low yields (see Figure) could be measured with JYFLTRAP. Of the measured nuclides, ^{160}Pm is so exotic that it cannot be found from the Karlsruher Nuklidkarte 2012 edition. Many of the measured mass values have been previously based only on extrapolations, and therefore the experiment was a major step forward. ^{166}Gd marks now the heaviest radioactive nuclide measured with JYFLTRAP.



RADSAGA offers 15 positions for PhD studies in the field of radiation effects in electronics. Application open!
https://jobs.web.cern.ch/job/12243
http://radsaga.web.cern.ch/

European Researchers' Night at the Department of Physics, 30 September 2016





The European Researchers' Night took place across Europe on the 30th of September 2016. Almost 6000 people attended the event at the University of Jyväskylä with more than 1000 visiting the Accelerator Laboratory. There they participated in a number of tours around the experimental facilities, lectures and interactive demonstrations organised by 60 local researchers. The European Researchers' Night event will be organised in the laboratory also in 2017. The Accelerator Laboratory activities were coordinated by Arto Javanainen, Philippos Papadakis was the coordinator for the University of Jyväskylä and Janne Pakarinen for the national consortium. Photos: Wladyslaw Trzaska.

Next Call for Proposals
Deadline: March 15, 2017

The next deadline for submission of proposals and letters of intent is March 15, 2017. **Proposals should include an abstract/summary**. A justification of the beam time requested, based on cross-sections, detector efficiencies, etc. should be given. If a proposal is the continuation of an existing experimental program at the JYFL Accelerator Laboratory, a summary of the status of the project should be included. Proposals and letters of intent should be sent (preferably as a postscript or pdf file) to the Program Advisory Committee secretary Mikael Sandzelius (address: see below) and include the Proposal Summary Sheet which is available from the JYFL WWW-pages (https://www.jyu.fi/fysiikka/en/research/accelerator/index_html/beamtime.html). You are encouraged to contact anyone in the Contact List at the end of this Newsletter for more information.

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