

the ECOS 'Working Group'

ECOS: European Collaboration for Stable (ion beams)

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Task: Produce a document to NUPECC

**-Study the up-grade of existing or new accelerators
to mach the physics requirements**

-Physics
-Collaboration
-Physics requirements (accelerator,target,instruments)

--The Science with high intensity stable ion beams, Beam intensity limitations and technical developments for various types of research lines!

N=Z nuclei (in-beam spectroscopy and decay studies)

SHE search

Super heavy nuclei (in-beam spectroscopy and decay studies)

Neutron-deficient nuclei (in-beam spectroscopy and decay studies)

Exotic shapes and decay modes in nuclei

Neutron rich nuclei using DIC reactions

Nuclear astrophysics

--Status and future developments of existing facilities

LEGNARO

GANIL

GSI

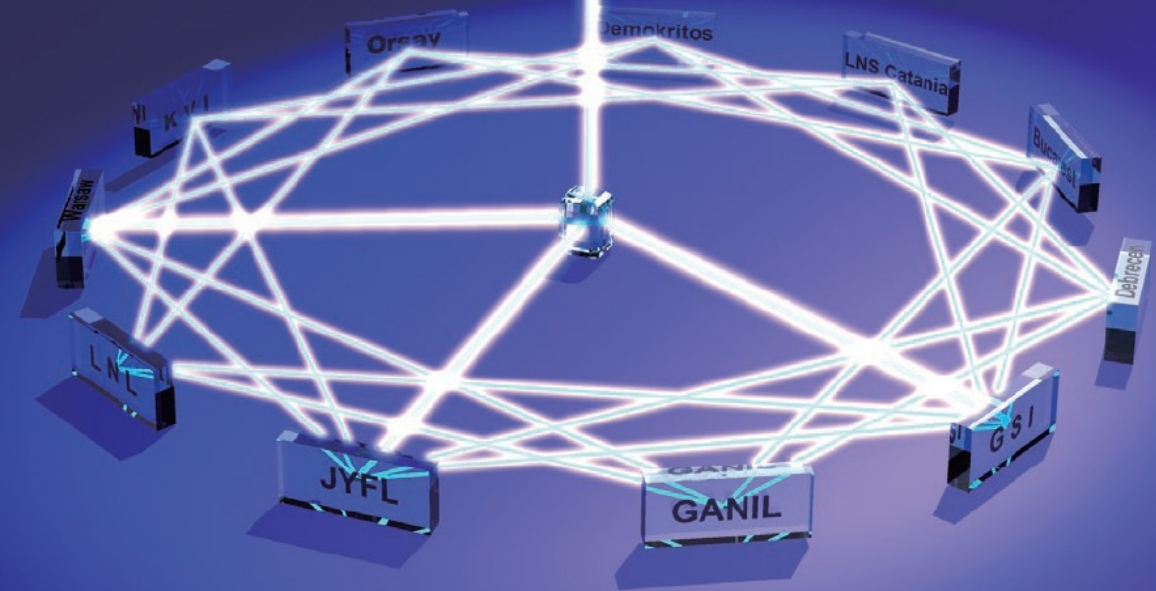
JYVASKYLA

KVI

--Recommendations

NuPECC web pages.

ECOS



ECOS: European COllaboration on Stable ion beams

the ECOS

‘Network within ENSAR’

The objectives of ECOS:

--Bring together and coordinate the expertise that is available in the European countries in order to achieve the research and developments activities needed in all aspects related to the production and use of high intensity heavy ion beams.

--Optimize resources and manpower for the up-grade and development of various stable ions beam facilities in Europe in order to optimize their scientific output. From this point of view, NA02-ECOS has a direct link to the TNA delivering stable ion beams to the users community in Europe. These are GSI, GANIL, LNL/LNS, JYFL , ALTO and KVI

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ECOS-NA

6 Beneficiaries

GANIL (France)

IN2P3 (France)

GSI-Darmstadt (Germany)

INFN (Italy)

University of Jyvaskyla (Finland)

IFJ PAN Krakow - HIL UW Warsaw(Poland)

30 associate partners

NIPNE-Bucarest (Roumania)

IN2P3 (France)

Department of Physics, University of Liverpool (UK)

KVI –Groningen (Netherlands)

CEA-Saclay (France)

LMU Munich (Germany)

IRMM Geel, (Belgium)

University of Sofia (Bulgaria)

Paul Scherrer Institute (Switzerland)

Royal Institute of Technology - Stockholm (Sweden)

University of Surrey (UK)

University of Paisley (UK)

University of Mainz (Germany)

Comenius University, Bratislava (Slovakia)

Nigde University (Turkey)

NCSR Demokritos (Greece)

Atomki- Bebrece (Hungary)

HIL UW warsaw (Poland)

SAFE –University of Oslo (Norway)

CEA-Bruyeres-le –Chatel (France)

TU Munich (Germany)

INRNE-BAS, Sofia (Bulgaria)

Lund University (Sweden)

University of Bern (Switzerland)

University of Manchester (UK)

University of York (UK)

STFC Daresbury (UK)

University of Aarhus (Denmark)

Istanbul University (Turkey)

NR-Dubna (Russia)

Description of work

Task 1 High power thin-target technology (participants: IPNO/IN2P3 + GANIL+GSI)

The maximum usable primary beam current with thin targets is among others determined by the long-term stability of the thin targets under irradiation. High beam intensities lead to a considerable heating of the targets, and, hence to thermal stress, possibly phase transitions, oxidation or reduction of the chemical compounds and diffusion into the target backing respectively.

We propose to study these phenomena in detail and to compare for example the performance of thin actinide targets as function of the production method (painting, spray-painting, electrolysis, electro-deposition, evaporation and sputtering), the used chemical compounds (oxide, carbide, others) and backings/coatings respectively. The way is to bring together labs that use different techniques for target preparation and those that can test the target performance under “real” conditions.

For this task ECOS will have the duty to organize the collaboration and exchange of expertise on the development of high power target technology

Task 2 Synergies in Super Heavy Element Research (participant: GSI + GANIL+JYFL)

The study of Super Heavy Elements (SHE) is one of today's most challenging interdisciplinary research fields. It brings together nuclear physics, atomic physics, chemistry and theoretical physics. Over the last years researchers from the different disciplines have continued to strengthen exchange of ideas. The ECOS community proposes to use this Network in order to enhance synergies among the research groups on a European scale.

For this task ECOS is aiming for bringing together the groups with research activities on SHE using high intensity ion beams for an exchange of new ideas and techniques related to the use of very high intensity stable beams.

Task 3 Organisation of bi-annual ECOS Workshops (participants: IPNO/IN2P3, GANIL, INFN, GSI, JYFL, IFJAN, WARSAW)

In order to optimize resources, two workshops will be organised with parallel sessions dedicated to all aspects of the technical developments and research activities using stable ions beam facilities in Europe. The second workshop will be coupled to the NA town meeting

Task 4 Coordination of stables Ion beam facilities in Europe (participants: IPNO/IN2P3, INFN, JYFL,GANIL,GSI, IFJAN)

This third task is aiming for coordination and organization of the network.

Deliverables

D-NA02-1: Report on the development of high power thin-target technology with special emphasis on new techniques and methods that will allow increasing the primary beam intensity usable with such targets. (month 40)

D-NA02-2: Report on the research activities related to SHE 's ,and on the achievement made in this research field (month 40)

D-NA02-3: Report on the collaborations and synergies between facilities providing stable Ions beam facilities in Europe initiated and driven by ECOS network (month 40)

Milestone number	Milestone name	W o r k package (s) involved	Expected date	M e a n s o f validation
M-NA02-1	1 st ECOS joint workshop and coordination committee meeting	NA02	24	
M-NA02-2	2 nd ECOS joint workshop, coordination committee meeting and town meeting	NA02	44	
M-NA02-5	Network setup	NA02	12	
M-NA02-5	Webpage available	NA02	12	