2 TA02: TRANSNATIONAL ACCESS TO GSI

2.1 PUBLICITY CONCERNING THE OPPORTUNITIES FOR ACCESS TO TA02

The measures taken to publicise the opportunities for access are:

- A dedicated web site: www.**gsi**.de/informationen/users/EC-**funding**/I3/**ENSAR**.html
- an E-mail to the GSI Users' Group with a 'Call for Applications'

In this web site it is described:

- General information on GSI
- Research capabilities
- Access procedure
- Beam time scheduling
- Support offered to user
  - Technical and logistic support
  - Financial support within ENSAR
  - How to get access funding
  - Who can apply for access funding
  - Open calls for proposals and deadlines
- Application form
- User registration
- Instructions for reimbursement of travel costs and statement of travel costs

2.2 SELECTION PROCEDURE

2.2.1 Users Selection Panel

GSI is open to national and international user groups. To apply for access to the accelerator and experimental facilities, a written project proposal has to be submitted. The proposals are reviewed by an international Programme Advisory Committee, the GSI General Program Advisory Committee (G-PAC). If a user group in addition applies for EC support under one of the Integrated Infrastructure Initiatives of FP7, a separate funding application has to be submitted. This is reviewed by a specific User Selection Panel.

The G-PAC presently has 12 members (all external), with more than half of them coming from universities or research institutes outside Germany. There are specialized PACs for some research activities pursued at GSI (plasma physics PPAC, biophysics BIO-PAC, and material science MAT-PAC). Regular All-PAC meetings have been introduced to improve the communication between the PACs, where the future beam time contingents are discussed and decided. The ENSAR User Selection Panel presently has 3 external members, all being members of the G-PAC and experts in the field of nuclear structure physics and applications of nuclear beams in other fields.

In a first round the PACs relevant for ENSAR evaluate all the submitted proposals on the basis of scientific merit and makes recommendations concerning the beam time to be

allocated to each project. In a second step the ENSAR User Selection Panel then reviews the funding applications. The panel evaluates the time and the amount of travel requested for setting up and executing the experiment and decides on the person-days and travel to be allocated to the proposal in question.

In case a proposal is rejected the proposers receive a letter with detailed information on the scientific-technical or formal (eligibility) reasoning for not accepting the proposal. Often the proposers are invited to resubmit a revised proposal.

The Selection Panel members for the reporting period are listed in Annex 1.

2.2.2 Selection Panel meetings

One meeting in 2010: November 2, 2010
Two meetings in 2011: June 15-24, 2011, November 23, 2011
Proposal evaluation via E-mail circulation in April 2011

External members of selection panel (apart from the Research Director of GSI, Karlheinz Langanke, and the TNA manager) are:

Yorick Blumenfeld (IPN Orsay)
Norbert Pietralla (TU Darmstadt)
Matthias Weidenmüller (University Heidelberg)

2.2.3 Selection criteria

The Users Selection Panel bases its selection on scientific merit, following the prescriptions of the contract. Only user projects positively evaluated by the G-PAC are considered. The panel evaluates time and amount of travels requested for setting up and executing the experiment and decides on the numbers of person-days and travels to be allocated to the proposal in question. Due to the large number of applications for Access funding, the selection of user group was very strict and limited to those in most need of financial support.

2.3 TRANSNATIONAL ACCESS ACTIVITY DURING THE REPORTING PERIOD

A total of 10 projects have been supported during the reporting period:

(1) **115decay/Rudolph:** X-ray fingerprinting of element 115 decay chains by Dirk Rudolph et al.
(2) **BetaFiss/Andrey:** Identification and systematic studies of the beta-delayed fission in the lead region by Andrei Andreyev et al.

(3) **Ice/Domaracka:** Ion induced sputtering & phase transitions in water ice by Alicja Domaracka et al.
(4) **b-neutrons/Gomez:** Measurement of beta-delayed neutrons around the third r-process peak (S410) by Maria Belen Gomez Hornillos et al.
(5) **Interact/Patera:** Fragmentation studies of light ions for medical applications by Vincenzo Patera et al.
(6) **RadDistr/Benlliu:** Access to proton and neutron radial distributions using Delta resonance excitation in isobar charge-exchange reactions by Jose Benlliure et al.
(7) **SetupTest/Bruce:** Test of different setups for the HISPEC/DESPEC collaboration by Alison Bruce et al.
(8) **n-skin/Kraszna:** Constraining the symmetry energy of the EOS by precise neutron-skin thickness measurements (S408) by Attila Krasznahorkay et al.
(9) **StopCell/Dendoov:** Commissioning of the first-generation cryogenic stopping cell for the low-energy branch of the Super-FRS by Peter Dendooven et al.

and

(10) **AGATA/Scheidenb:** Special funds for the AGATA campaign at GSI

Two more projects have been selected for support but did retrieve any money because there was no beam time scheduled:

(11) **30Ar/Martel:** Search for 30Ar by Ismael Martel et al.
(12) **TransFerm/Antal:** Nuclear structure study of Transfermium nuclei by Stanislav Antalic et al.

In the 3rd USP Meeting thirteen new User Projects have been selected for the beam time periods in 2012, those are therefore not included of this report.

940 hours of beam time were delivered; 62 individual users visited the facility and spent 637 person-days at GSI.

User project acronym	Users	Scientific field	Number of days spent at the infrastructure
115decay/Rudolph	7	Physics/Nuclear Physics	87
n-skin/Krazna	7	Physics/Nuclear Physics	87
StopCell/Dendoov	5	Physics/Nuclear Physics	93
BetaFiss/Andrey	7	Physics/Nuclear Physics	47
Ice/Dormaracka	2	Physics/Material Science	10
b-neutrons/Gomez	3	Physics/Nuclear Physics	74
Interact/Patera	4	Physics/Nuclear Physics	63
AGATA/Scheidenb	13	Physics/Nuclear Physics	51
RadDistr/Benlliu	9	Physics/Nuclear Physics	96
SetupTest/Bruce	5	Physics/Nuclear Physics	29

In Annex 2 (Database) the User Projects for which costs have been incurred in 2011 are tabulated. The users are listed in Annex 3.

2.4 SIGNIFICANT ACHIEVEMENTS OBTAINED BY THE USERS DURING THE REPORTING PERIOD

(1) **RadDistr/Benlliu:** It was shown that the possibility to identify the excitation of the Δ-resonance in isobar charge exchange reactions with the mangetic spectrometer FRS at GSI. The high resolving power of the FRS provides not only an unambiguous identification of the projectile residues issued in relativistic heavy-ion collisions, but also an extremely accurate measurement of the longitudinal momentum. In the particular case of isobar charge-exchange collisions induced by 124Sn and 112Sn beams at 1AGeV, the shift in momentum induced by the excitation of the Δ-resonance was clearly observed and the mean energy, width and cross section of the in-medium Δ-resonance were determined.

(2) **Setup/Bruce:** A first test of the behavior of $LaBr_3(Ce)$ detectors in a harsh experimental environment was performed.

(3) **n-skin/Krazna:** Precise determination of neutron-skin thicknesses for constraining the symmetry energy part of the nuclear EOS by measuring the anti analog of the GDR (AGDR).

(4) **StopCell/Dendoov:** Operation of a cryogenic stopping cell for the low-energy branch of the SFRS@FAIR.

(5) **Interact/Patera:** An international collaboration (France, Germany, Italy, Spain) has been created to measure at GSI the $d^2\sigma/d\theta dE$ fragmentation cross section of interest for hadron therapy and space radioprotection. The detector is an evolution of a pre-existing setup, optimized for the detection of fragments with large angular acceptance and with accuracy at the few % level. The experiment has been mounted and took the first run of fragmentation data with ^{12}C beam at 400 AMeV.

(6) **Ice/Domaracka:** A first prospective experiment was performed at HLI with 1.4 MeV/u Xe^{18+} ion beam in an UHV chamber equipped with a cold head and mass spectrometer. The desorption dynamics of species from water ice (D_2O) was monitored as a function of irradiation time. Further experiments are planned in the near future.

Since most of the experiments took place in the 2nd half of 2011, data analysis is still ongoing, and at the moment only a limited number of peer-reviewed publications are available. However, several drafts are on the way of being submitted and will be listed in the next report.
The current list of peer-reviewed publications is part of Annex 4.

2.5 USERS MEETINGS

No user meetings took place during the reporting period.

ANNEXES 1-4

See MS Access Database