

Transnational access RUG-KVI

Description of the publicity concerning the new opportunities for access

The measures taken to publicise the opportunities for access are:

- a dedicated web site: <http://www.rug.nl/kvi/ensar>

Within this web site, one can choose for:

- Frequently asked questions:
 - Who can get support?
 - Which countries are EU Member States or Associated States?
 - How to get support?
 - Where are the research proposal forms?
 - What will be supported?
 - Which obligations are there?
- Instructions for Group Leaders
- EU Rules for Transnational Access Activities
- KVI Rules for EU Supported Projects
- List of users template

Description of the selection procedure

In principle the access to the AGOR facility is open to all qualified physicists. Each person or group wanting to use the facility has to write a proposal for an experiment, stating the motivation and interest of the experiment, its feasibility, the equipment required and whether EU support is requested. These proposals are submitted to the Programme Advisory Committee (PAC), which classifies them in several categories of priority, according to scientific merits only. This committee advises the KVI Director on the scientific priorities of the submitted papers.

For the accepted proposals in which EU support is requested, the KVI Programme Advisory Committee (acting as Users Selection 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. The PAC decides which groups will receive EU support on scientific merit, following the prescriptions of Annex III of the contract, Article III.3.6.

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.

Please find in Appendix 1 (Database) the list of the Selection Panel members for the reporting period. There have been no changes in the composition of the Users Selection Panel during the reporting period.

In two meetings of the Users Selection Panel, experiments were evaluated for ENSAR support: on 5 February 2010 and 22 June 2011. Both meetings were held at KVI Groningen. In the meeting of 5 February 2010, experiment KVI-T29 was approved for ENSAR support provisionally, awaiting the decision of the European Commission on the approval of the ENSAR application. In the meeting of 22 June 2011, the final approval for experiment T29 was given.

See Annex 1 (Database) for the list of the Selection Panel members.

Transnational Access activity

Three projects have been supported during the reporting period:

- i. KVI-F18: Dynamics of three- and four-nucleon systems studied in the elastic scattering and breakup reactions (spokesperson: S. Kistryn and E. Stephan, Jagiellonian University, Cracow);
- ii. KVI-T29: Radiation hardness of Avalanche Photodiodes, radiation damage and defect studies in PWO crystals, and hadron response of inorganic scintillating fibers (spokesperson: R. Novotny, Justus-Liebig University Giessen);
- iii. KVI-T30: Experiments for real time in-vivo dosimetry for ion therapy (spokesperson: F. Fiedler, Helmholtz-Zentrum Dresden-Rosendorf).

Experiment KVI-F18 is finished, experiments KVI-T29 and KVI-T30 are ongoing. A fourth project was promised EU-support, but for this project only preparatory activities have been performed so far:

- iv. KVI-S58: Study of electric dipole strength below the particle threshold in $(p,p'\gamma)$ experiments (spokesperson: A. Zilges and J. Enders, Universität zu Koeln).

All experiments mentioned above are in the field of physics. Experiments KVI-F18, KVI-S58 and KVI-T29 are in the discipline of nuclear physics, experiment KVI-T30 is in the discipline of other physics (medical physics).

See Annexes 2 and 3 (Database) for the List of User-Projects and the List of Users, respectively.

Scientific output of the users at the facilities

Highlights of important research results from the supported user-projects:

- i. KVI-F18 (Dynamics of three- and four-nucleon systems studied in the elastic scattering and breakup reactions):
The BINA detection system was put into operation again and data were collected with a statistics sufficient for precise determination of cross sections for d-p and d-d systems. On-line spectra confirm very good identification of various reaction channels and overall consistency of the data. Special runs performed with energy degraders will provide precise calibration for protons and deuterons in the whole range of the measured energies.
- ii. KVI-T29 (Radiation hardness of Avalanche Photodiodes, radiation damage and defect studies in PWO crystals, and hadron response of inorganic scintillating fibers):
In irradiations by protons, all samples of Large-Area Avalanche Photodiodes (LAAPDs) demonstrated sufficient radiation hardness, as required by the PANDA experiment. Further, it was shown that irradiation by low-energy protons of about 90 MeV does not influence optical properties of PWO crystals, in contrast to irradiation by protons in the energy range of about 10-100 GeV. This observation allows to make conclusions on the nature of created defects in the PWO crystals, caused by proton beams.
- iii. KVI-T30 (Experiments for real time in-vivo dosimetry for ion therapy):
A 150 MeV proton pencil beam was shot on targets made from Polyethylene, Polymethylmethacrylate (PMMA) and Graphite using beam currents between 50 and 200 pA. The count rate capability of the Compton camera was investigated at different beam currents. Gamma-ray distributions induced by the proton beam in the different targets were measured and first experience with the imaging process of the Compton camera was obtained. The secondary neutron flux was characterized using activation sources and a gamma spectrometer provided by KVI.

Please find in Annex 4 (included in this document) the list of publications that have appeared in peer-reviewed journals resulting from work carried out under the TA activity. Obviously no publications can be expected from such complex experiments within less than one year, therefore no publications are listed in the Database. The publications listed in Annex 4 refer to experiments/activities supported under the previous access contract of the FP6 programme ('EURONS', no. 506065).

User meetings

No user meetings have taken place in the reporting period.

Annexes

See the Database for Annexes 1, 2 and 3. As explained above, no publications are listed in the Database. Instead, in the annex attached to this document, publications resulting from work carried out under the previous access contract of the FP6 programme ('EURONS', no. 506065) are listed.

Annex 4. List of publications resulting from work carried out under the Transnational Access activity in FP6

On EURONS experiment KVI-P01:

N.L.Achouri, J.C.Angelique, G.Ban, B.Bastin, B.Blank, S.Dean, P.Dendooven, J.Giovinazzo, S.Grevy, K.Jungmann, B.Laurent, E.Lienard, O.Naviliat-Cuncic, N.A.Orr, A.Rogachevskiy, M.Sohani, E.Traykov, H.Wilschut

The β - γ decay of ^{21}Na

Journal of Physics G **37**, 045103 (2010),

<http://dx.doi.org/10.1088/0954-3899/37/4/045103>

On EURONS experiment KVI-P07:

S. Hyldegaard, C. Forssén, C.Aa. Diget, M. Alcorta, F.C. Barker, B. Bastin, M.J.G. Borge, R. Boutami, S. Brandenburg, J. Büscher, P. Dendooven, P. Van Duppen, T. Eronen, S. Fox, B.R. Fulton, H.O.U. Fynbo, J. Huikari, M. Huyse, H.B. Jeppesen, A. Jokinen, B. Jonson, K. Jungmann, A. Kankainen, O. Kirsebom, M. Madurga, I. Moore, P. Navrátil, T. Nilsson, G. Nyman, G.J.G. Onderwater, H. Penttilä, K. Peräjärvi, R. Raabe, K. Riisager, S. Rinta-Antila, A. Rogachevskiy, A. Saastamoinen, M. Sohani, O. Tengblad, E. Traykov, J.P. Vary, Y. Wang, K. Wilhelmson, H.W. Wilschut, J. Äystö

Precise branching ratios to unbound ^{12}C states from ^{12}N and ^{12}B β -decays

Physics Letters B **678** (2009) 459-464

<http://dx.doi.org/10.1016/j.physletb.2009.06.064>

S. Hyldegaard, M. Alcorta, B. Bastin, M.J.G. Borge, R. Boutami, S. Brandenburg, J. Büscher, P. Dendooven, C.Aa. Diget, P. Van Duppen, T. Eronen, S.P. Fox, L.M. Fraile, B.R. Fulton, H.O.U. Fynbo, J. Huikari, M. Huyse, H.B. Jeppesen, A.S. Jokinen, B. Jonson, K. Jungmann, A. Kankainen, O.S. Kirsebom, M. Madurga, I. Moore, A. Nieminen, T. Nilsson, G. Nyman, C.J.G. Onderwater, H. Penttilä, K. Peräjärvi, R. Raabe, K. Riisager, S. Rinta-Antila, A. Rogachevskiy, A. Saastamoinen, M. Sohani, O. Tengblad, E. Traykov, Y. Wang, K. Wilhelmson, H.W. Wilschut, J. Äystö

R-matrix analysis of the β decays of ^{12}N and ^{12}B

Phys. Rev. C **81** (2010) 024303

<http://link.aps.org/doi/10.1103/PhysRevC.81.024303>

On EURONS experiment KVI-S49/52:

J. Endres, D. Savran, A.M. van den Berg, P. Dendooven, M. Fritzsche, M.N. Harakeh, J. Hasper, H.J. Wörtche, A. Zilges

Splitting of the pygmy dipole resonance in ^{138}Ba and ^{140}Ce observed in the (α, α') reaction

Phys. Rev. C **80** (2009) 034302

<http://link.aps.org/doi/10.1103/PhysRevC.80.034302>

D. Savran, J. Endres, M. N. Harakeh, N. Pietralla, K. Sonnabend, V. I. Stoica, H. J. Wörtche, A. M. van den Berg, A. Zilges

Splitting of the Pygmy Dipole Resonance

J. Phys.: Conf. Ser. **312** (2011) 092055

<http://iopscience.iop.org/1742-6596/312/9/092055>

J. Endres, P. Butler, M. N. Harakeh, S. Harissopulos, R.-D. Herzberg, R. Krücken, A. Lagoyannis, E. Litvinova, N. Pietralla, V. Yu. Ponomarev, L. Popescu, P. Ring, D. Savran, M. Scheck, K. Sonnabend, V.I. Stoica, H. J. Wörtche, A. Zilges

Splitting of the Pygmy Dipole Resonance

AIP Conf. Proc. **1377** (2011) 260-264
<http://dx.doi.org/10.1063/1.3628389>

J. Endres, E. Litvinova, D. Savran, P.A. Butler, M.N. Harakeh, S. Harissopulos, R.-D. Herzberg, R. Krücken, A. Lagoyannis, N. Pietralla, V.Yu. Ponomarev, L. Popescu, P. Ring, M. Scheck, K. Sonnabend, V.I. Stoica, H.J. Wörtche, A. Zilges
Isospin character of the pygmy dipole resonance in ^{124}Sn
Phys. Rev. Lett. **105** (2010) 212503
<http://link.aps.org/doi/10.1103/PhysRevLett.105.212503>

J. Endres, A. Zilges, N. Pietralla, D. Savran, K. Sonnabend, M.N. Harakeh, V. Stoica, H. J. Wörtche, P. Butler, R.-D. Herzberg, M. Scheck, R. Krücken, L. Popescu, S. Harissopulos, A. Lagoyannis
Study of the Pygmy Dipole Resonance in ^{124}Sn by means of the $(\alpha, \alpha\gamma)$ reaction
AIP Conf. Proc. **1090** (2009) 357-361
<http://dx.doi.org/10.1063/1.3087045>