



OECD Nuclear Energy Agency

**Fifth International Workshop on the Utilisation and Reliability  
of High Power Proton Accelerators (HPPA5)**

**6-9 May 2007, Mol, Belgium**

## **Programme**

**Sunday, 6 May 2007**

- 18:00-20:00 Registration  
19:00 Welcome drink (SunParks)

**Monday, 7 May 2007**

- 08:00-08:30 Bus transport from SunParks to SCK•CEN  
08:00-09:00 Registration
- Opening Session (Chairs: P. D'hondt, A. Mueller)**
- 09:00-09:10 Welcome address from SCK•CEN  
09:10-09:30 Welcome address from OECD/NEA  
09:30-10:00 *Invited speech*  
Title to be confirmed (*Y. Jongen, IBA, Belgium*) ..... O-1  
10:00-10:30 *Invited speech*  
MEGAPIE – Irradiation Experience of the First Megawatt Liquid Metal  
Spallation Target (*F. Groeschel, PSI, Switzerland*) ..... O-2  
10:30-11:00 Coffee break

**Session on MEGAPIE Programme (Chairs: J. Knebel, F. Groeschel)**

- 11:00-11:20 Safety Evaluation of the MEGAPIE Experimental Facility: Results  
and Insights from the Application of Probabilistic Safety Assessment  
(*L. Podofillini, PSI, Switzerland*) ..... M-1  
11:20-11:40 A Dedicated Beam Interrupt System for the Safe Operation of the  
MEGAPIE Liquid Metal Target (*K. Thomsen, PSI, Switzerland*) ..... M-2  
11:40-12:00 The Role of SCK•CEN in the MEGAPIE Project (*M. Dierckx*) ..... M-3  
12:00-13:30 Sandwich lunch

**Session I: Accelerator Programmes and Applications (Chairs: H. Klein, P. Pierini)**

- 13:30-14:00 *Invited speech*  
Status of the EUROTRANS R&D Activities for ADS Accelerator  
Development (*J-L. Biarrotte, IPN, France*) ..... I-1  
14:00-14:20 Design of a Test Cryomodule for the High-energy Section of the  
EUROTRANS Linac (*S. Barbanotti, INFN, Italy*) ..... I-2  
14:20-14:40 Proton Engineering Frontier Project (*Y.S. Cho, KAERI, Rep. of Korea*) ..... I-3  
14:40-15:10 Coffee break

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| 15:10-15:30 | Development of Superconducting Spoke Cavities for an ADS Linac<br><i>(G. Olry, IPN, France)</i> .....                              | I-4 |
| 15:30-15:50 | Status of the Preparation of the Elliptical Cavity System for the<br>EUROTRANS Cryomodule <i>(N. Panzeri, INFN, Italy)</i> .....   | I-5 |
| 15:50-16:10 | Development of Room Temperature and Superconducting CH-structures<br>for High Power Linacs <i>(H. Podlech, IAP, Germany)</i> ..... | I-6 |
| 17:00-17:30 | Bus transport from SCK•CEN to SunParks   |     |

**Tuesday, 8 May 2007**

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| 08:00-08:30 | Bus transport from SunParks to SCK•CEN |
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**Session I: Accelerator Programmes and Applications (Chairs: H. Klein, P. Pierini) (cont.)**

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| 08:30-09:00 | <i>Invited speech</i><br>Upgrade of the PSI Proton Accelerator Facility to 1.8 MW<br><i>(P. Schmelzbach, PSI, Switzerland)</i> .....                   | I-7  |
| 09:00-09:20 | ERAWAST – A New Production Route for Exotic Long-lived Radionuclides<br><i>(D. Schumann, PSI, Switzerland)</i> .....                                   | I-8  |
| 09:20-09:40 | 150 MeV FFAG Accelerator Complex as a Neutron Production Driver<br>for ADS Study <i>(M. Tanigaki, Kyoto Univ., Japan)</i> .....                        | I-9  |
| 09:40-10:00 | Hybrid PBG Structure: A Challenging Cavity System for High Power,<br>High Intensity Accelerators <i>(V. Vaccaro, Univ. "Federico II", Italy)</i> ..... | I-10 |
| 10:00-10:30 | Coffee break   |      |

**Session II: Accelerator Reliability (Chairs: B.H. Choi, J-L. Biarrotte)**

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| 10:30-11:00 | <i>Invited speech</i><br>Operational Experience of a Superconducting Cavity Fault Recovery<br>System at the Spallation Neutron Source <i>(J. Galambos, ORNL, USA)</i> .....                  | II-1 |
| 11:00-11:30 | <i>Invited speech</i><br>Reliability Studies for a Superconducting Driver for an ADS Linac<br><i>(P. Pierini, INFN, Italy)</i> .....   | II-2 |
| 11:30-11:50 | Comparison of Beam Trip Frequencies Between Estimation from<br>Current Experimental Data of Accelerators and Requirement from<br>ADS Transient Analysis <i>(H. Takei, JAEA, Japan)</i> ..... | II-3 |
| 11:50-12:10 | Cavity Detuning Due to Power Dissipation: A New Numerical<br>Approach Combining the Thermo-mechanical and the e.m. Codes<br><i>(V. Vaccaro, Univ. "Federico II", Italy)</i> .....            | II-4 |
| 12:10-13:40 | Sandwich lunch   |      |

**Session III: Spallation Target Development and Coolant Technology**

*(Chairs: H. Oigawa, Y. Gohar)*

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| 13:40-14:10 | <i>Invited speech</i><br>WEBExpIr: Windowless Electron Beam Experimental Irradiation<br><i>(J. Heyse, SCK•CEN, Belgium)</i> ..... | III-1 |
| 14:10-14:30 | RELAP Modelling of the Spallation Loop in the MYRRHA Facility<br><i>(S. Heusdains, SCK•CEN, Belgium)</i> .....                    | III-2 |
| 14:30-14:50 | Polonium Behaviour in Eutectic Lead-bismuth Alloy<br><i>(J. Neuhausen, PSI, Switzerland)</i> .....                                | III-3 |
| 14:50-15:10 | Thermodynamic Properties and Equation of State of Heavy Liquid Metals<br><i>(V. Sobolev, SCK•CEN, Belgium)</i> .....              | III-4 |
| 15:10-15:30 | Coffee break  |       |

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| 15:30-15:50 | Design and Supporting R&D of the XT-ADS Spallation Target<br>( <i>P. Schuurmans, SCK•CEN, Belgium</i> ).....   | III-5 |
| 15:50-16:10 | Study of Measurement Method of High-energy Neutrons for ADS<br>( <i>K. Abe, Tohoku Univ., Japan</i> ).....   | III-6 |
| 16:10-16:30 | Application of the INCL+ABLA Reaction Model to the Study of the Evolution of Spallation Targets ( <i>Th. Aoust, SCK•CEN, Belgium</i> ).....  | III-7 |
| 16:30-16:50 | Neutronic Design of the EURISOL Multi-MW Spallation Target for Radioactive Ion Beam Production ( <i>A. Herrera-Martinez, CERN, Switzerland</i> ).....  | III-8 |
| 16:50-17:10 | Delayed Neutrons Yields and Time Spectra from 1 GeV Protons Interacting with Thick <sup>nat</sup> Pb, <sup>209</sup> Bi and <sup>nat</sup> Fe Targets ( <i>D. Ridikas, CEA, France</i> ) ..... | III-9 |
| 17:30-18:00 | Bus transport from SCK•CEN to SunParks   |       |
| 19:30-23:00 | Conference dinner  |       |

***Wednesday, 9 May 2007***

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| 08:00-08:30 | Bus transport from SunParks to SCK•CEN |
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**Session IV: Subcritical System Design and ADS Simulations (Chairs: *P. Baeten, S. Monti*)**

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| 08:30-09:00 | <i>Invited speech</i><br>Pre-conceptual Design of a Helium-cooled ADS: He-EFIT<br>( <i>P. Richard, CEA, France</i> ).....                                     | IV-1 |
| 09:00-09:20 | A-BAQUS: A Multi-entry Graph Assisting the Neutronic Design of an ADS. Case Study: EFIT ( <i>C. Artioli, ENEA, Italy</i> ) .....                              | IV-2 |
| 09:20-09:40 | Comparative Analysis of Neutron Sources Produced by Low-energy Electrons and Deuterons for Driving Subcritical Assemblies ( <i>Y. Gohar, ANL, USA</i> ).....  | IV-3 |
| 09:40-10:00 | China ADS Subcritical Assembly and Preliminary Experimental Results ( <i>Y.Q. Shi, CIAE, China</i> ) .....  | IV-4 |
| 10:00-10:20 | Improvement of Dynamics Calculation Code DSE for Accelerator-driven System ( <i>M. Suzuki, Tohoku Univ., Japan</i> ) .....                                    | IV-5 |
| 10:20-10:50 | Coffee break  |      |
| 10:50-11:10 | Corrosion Resistance of Al-Fe-alloy-coated Steel, Refractory Metals and Ceramics in Lead-bismuth at 700°C ( <i>M. Takahashi, TIT, Japan</i> ) .....           | IV-6 |
| 11:10-11:30 | Neutronic Design of the XT-ADS Core with In-pile Positions ( <i>G. Van den Eynde, SCK•CEN, Belgium</i> ) .....  | IV-7 |
| 11:30-11:50 | The Valuation of Calculation and Extrapolation Experimental Result on China ADS Subcritical Experimental Assembly Venus-1 ( <i>P. Xia, CIAE, China</i> )..... | IV-8 |
| 11:50-13:40 | Sandwich lunch  |      |

**Session V: ADS Experiments and Test Facilities (Chairs: *H. Aüt Abderrahim, M. Tanigaki*)**

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| 13:40-14:10 | <i>Invited speech</i><br>The “GUINEVERE” Project at the VENUS Facility<br>( <i>P. Baeten, SCK•CEN, Belgium</i> ).....                     | V-1 |
| 14:10-14:40 | <i>Invited speech</i><br>Research and Development Programme on ADS in JAEA ( <i>tentative</i> )<br>( <i>H. Oigawa, JAEA, Japan</i> )..... | V-2 |
| 14:40-15:00 | The GENEPi Neutron Sources at Grenoble, Perspectives for the GUINEVERE Project at VENUS ( <i>A. Billebaud, CNRS, France</i> ).....        | V-3 |

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| 15:00-15:20 | Reactivity Measurements in Subcritical Core: RACE-T Experimental Activities ( <i>M. Carta, ENEA, Italy</i> ).....                                    | V-4 |
| 15:20-15:40 | The Materials Test Station: A Fast Spectrum Irradiation Facility ( <i>E. Pitcher, LANL, USA</i> ) .....  | V-5 |
| 15:40-16:00 | Benchmark Experiments of Accelerator-driven Systems (ADS) in Kyoto University Critical Assembly (KUCA) ( <i>C.H. Pyeon, Kyoto Univ. Japan</i> ) .... | V-6 |
| 16:00-16:30 | Coffee break   |     |
| 16:30-17:30 | Concluding session ( <i>Chair: P. D'hondt</i> )  |     |
| 18:00-18:30 | Bus transport from SCK•CEN to SunParks   |     |