



“Piero Caldirola” International Centre for the Promotion of Science
and International School of Plasma Physics

WORKSHOP ON FUSION FOR NEUTRONS AND SUB-CRITICAL NUCLEAR FISSION FUNFI

Villa Monastero, Varenna, Italy
September 12 - 15, 2011

2nd announcement and call for papers

Organized and sponsored by:

- * "Piero Caldirola" International Centre for the Promotion of Science and ISPP
 - * Istituto di Fisica del Plasma “Piero Caldirola”, CNR, Italy
 - * Università degli Studi di Milano Bicocca, Milano, Italy
 - * Engineering Department, Uppsala University, Sweden
 - * ENEA Centro Ricerche Frascati, Italy
 - * Consorzio RFX, Padova, Italy
- In collaboration with International Atomic Energy Agency

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Marco Tardocchi	Istituto di Fisica del Plasma “Piero Caldirola”, CNR
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Carlo Sozzi	Istituto di Fisica del Plasma “Piero Caldirola”, CNR

Purpose

The motivation, scope and aim of the FUNFI workshop derive from the renewed interest in nuclear energy that has led to new construction of fission reactors and R&D on next generation (GIV) types. Research on fusion reactors is continuing and has recently branched off to include plasmas of limited energy gain constituting powerful neutron sources suited for irradiation purposes, which can be tailored as drivers for sub-critical fission reactors. Fusion-fission hybrid reactors allow increased extraction efficiency of the fission fuel energy with relaxed energy gain demand on the fusion plasmas.

FUNFI will address the physics principles of fusion-fission hybrids and current research. The focus will be on the characteristics of different plasmas in *magnetic* confinement that can serve as drivers in hybrid reactors, as well as, driver interface to surrounding neutron reaction blankets.

The workshop is directed to scientists and PhD students on FUNFI hybrid research and relevant fields of *magnetic* fusion plasmas, fast fission reactors, neutron physics, etc., besides those interested in learning more about the potential role of fusion-fission hybrids to provide better nuclear energy.

The program will contain tutorials on scientific/technical background for FUNFI including its potential role in future use of nuclear energy, besides complementary lectures on selected research activities. The program will also include submitted contributions (on magnetic FUNFI plasmas), of which a selection will be made for presentation in the oral or poster sessions. Ample time is scheduled for discussions.

Besides the science/engineering aspects of hybrids, there will be a concluding session on the theme 'Future nuclear energy with FUNFI' based on special lecture presentations.

Special Lectures

- Geo-political and strategic aspects of present and future nuclear energy.
Hans Blix (Former GD of IAEA)
- Nuclear energy acceptance and potential role to meet future energy demand.
Which technical/scientific achievements are needed?
Roland Schenkel (Former DG of JRC-EU)

Tutorial Lectures

- Overview of nuclear energy; present and projected commercial use.
Alexander Stanculescu (Idaho National Laboratory, Idaho Falls, ID, USA)
- Neutronics for critical fission reactors and sub-critical fission in hybrids
Massimo Salvatores (CEA, Cadarache, France)
- Principles and experience of fast neutron reactors as compared to present (GII), constructed (GIII) and planned (GIV) thermal reactors
Andrei Rineiski (KIT, Karlsruhe, Germany)
- Fuel cycles and envisioned roles of fast neutron reactors and hybrids
Massimo Salvatores (CEA, Cadarache, France)
- 4 challenges in magnetic fusion research
(*Speaker to be confirmed*)
- Principles of ADS hybrids and the EU research program
Enrico Gonzalez (CIEMAT, Madrid, Spain)
- Principles of fusion neutron sources and fusion-fission hybrid reactor applications
Weston M. Stacey (Georgia Institute of Technology, Atlanta, Ge, USA)

Invited Research Papers

- Overview of hybrid system research activities in China
Yican Wu (Chinese Academy of Sciences, Hefei, China)
- New approaches to the tokamak-based hybrids
Michael Kotschenreuther (Univ. of Texas, Austin, USA)
- Research on fusion neutron sources
Mikhail P. Gryaznevich (CCFE, Culham, UK)
- Fusion neutron research at Novosibirsk including experiments
Alexander A. Ivanov (Budker Inst. of Nuclear Physics, Novosibirsk, Russia)
- Mirror-based hybrids of recent design
Ralph Moir (LLNL, Livermore, Ca, USA)
- The hybrid project based on the straight field line mirror concept
Olov Ågren (Uppsala Univ., Uppsala, Sweden)

Contributed Research Papers for Oral or Poster Presentation

Contributions are welcome on topics including:

- magnetic plasmas, concepts and projects for FUNFI applications;
- plasma Q, fission k and energy gain of fusion-fission hybrids;
- fuels for subcritical hybrid reactors;
- diagnostics for fusion-fission hybrids;
- strategic role of nuclear energy with fusion-fission hybrids.

Registration

Application/hotel reservation form can be downloaded from our web site www.ispp.it or obtained from Donatella Pifferetti funfi2011@ispp.it
Deadline for registration is **May 31st, 2011**.
Applicants will receive confirmation of hotel reservation by **June 17th, 2011**.

Contributed Papers

Contributed papers for the workshop will be selected by the Scientific Advisory Committee in line with the points listed in the sections ' Purpose' and 'Topics' on the basis of a one page abstract. These abstracts should be sent by **May 31st, 2011** to:
Marco Tardocchi tardocchi_funfi@ifp.cnr.it and in copy to
Donatella Pifferetti funfi2011@ispp.it
Notification of abstract acceptance will be sent via e-mail by **June 17th, 2011**.

Proceedings

Following the tradition of ISPP workshops started in 1971 all papers will be published in a book of Proceedings. Manuscripts must be delivered at the Conference. Detailed instructions for authors will be published on the Conference web site.

Registration Fee

Registration fee: 350 Euros should be paid by bank transfer **before July 29th, 2011 to:**
Banca Popolare di Lecco, Division of the Deutsche Bank, Via IV Novembre, 23829 VARENNA (LC), Italy.
Account opened in favour of "Piero Caldirola International Center":
IBAN: IT64 M031 0451 8300 0000 0009 500 - SWIFT code: DEUTITM1029
Please, state as motivation of payment: **your full name – Participant "FUNFI 2011"**.
All bank expenses are at participants' charge. Alternatively we accept cash-only payment in Varenna at the registration desk.
Please note credit cards cannot be accepted for payment of the registration fee.

Important dates

Application, hotel reservation and Abstract submission	May 31st, 2011
Notification of abstract acceptance and hotel reservation:	June 17th, 2011
Payment of registration fee by bank transfer (otherwise cash at registration desk)	July 29th, 2011
Manuscript delivery	September 13th, 2011

For enquiries, please contact:

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For any other question:

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