



COST

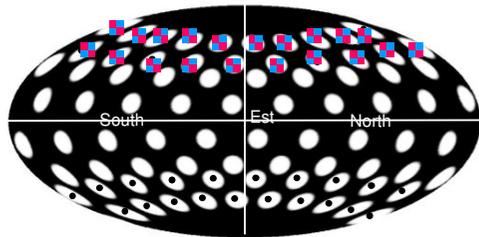
Developing the Physics and the Scientific community for Inertial Confinement Fusion at the time of NIF ignition

MP1208

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End date: 01/06/2017

Year: *Starting*



Presenter Prof. Dimitri Batani

Function in the Action: Vice Chair

VINCA Institute of Nuclear Sciences, Belgrade, Serbia



Scientific context and objectives

(1/2)

- **Background / Problem statement:**

The scientific demonstration of ignition of thermonuclear fusion is approaching in the US. In Europe several very large scale facilities will soon become operational (LMJ/PETAL, ELI)

- **Brief reminder of MoU objectives:**

Main objective of the Action is developing the Physics and the Scientific community for Inertial Confinement Fusion (ICF), via networking activities.

Specifically, this implies also several goals including:

- To allow the realization of common experiments both in Europe and overseas (Japan, US),
- To catalyze the formation of new scientists competent in this field
- To study new physical problems related to ICF and related topics



Scientific context and objectives

(2/2)

- **Research directions:**
- The objectives of the MoU are being achieved through the action of the WG, by preparing a scientific programme for European large-scale laser facilities for future years, and by consolidating the community via STSM, realization of common experiments, training of young researchers.
- The Action's *innovative* work, its unique contribution, consists in the preparation of the scientific community and of a research roadmap for the demonstration of nuclear ignition by direct drive done by the European Academic community on European laser facilities (LMJ/PETAL). **This is a purely civilian research activity with the goal of ignition for the future production of energy.** This is not duplicated elsewhere (e.g. both NIF in the US and CEA in France are studying fusion by indirect drive with the main goal of stewardship of nuclear stockpiles)



Working groups

- WG 1: Study of fast ignition and fast electron transport (coordinator J.Honrubia, Spain, P.Koester, Italy)
- WG 2: Study of the shock ignition Approach to ICF (coordinator J.Pasley, UK, S.Baton, France)
- WG 3: Study of Plasma and Laser Diagnostics (coordinator A.Zigler, Israel, C.Ristoscu, Romania)
- WG 4: Complementary aspects: Secondary sources of particles and radiation, materials (coordinator M.Perlado, Spain, T.Apostolova, Bulgaria)
- WG 5: Complementary aspects: Astrophysics in the laboratory (coordinator M.Koenig, France, J.Frederiksen, Denmark)



Future Plans and Challenges

- **During the first year of our Action, our plans are:**
- We will hold a general meeting of the Action in Bordeaux at the end of 2013 or beginning of 2014 (meeting of the MC and the 5 WG plus invited researchers). The choice of Bordeaux is essential due to LMJ/PETAL, an installation which is central for us since it may allow the demonstration of nuclear ignition by direct drive in Europe
- We need to consolidate strong links with the (international) Working Groups which in France are preparing the Academic Research Program for LMJ/PETAL. We will also consolidate links with the research groups which take part in the HiPER program.
- Our 5 WG are working in order to prepare a short-term research program including common experiments on large-scale laser facilities in Europe and in US and Japan. First common experiments will be already performed in early 2104.



Future Plans and Challenges

- **Other plans for the the future year:**
 - The “**Dissemination Panel**” (chair M.Tatarakis, Greece) will organize a summer school in 2014. We organized two schools in July 2013 in the framework of our Action: «Atoms and Plasma in Super-Intense Laser Fields», Erice, Sicily (director D.Batani) and «Introduction to High Power Light-Interactions» in Rethimno, Crete (director M.Tatarakis). Due to late start of the Action, these were not directly supported by COST but we found independent funding.
 - We plan to do a short movie on ICF and on our Action. We will organise dissemination activities for the general public, for scientists, for policy makers.
 - PhD. Students and young researchers will be a privileged target of activities including the preparation of e-books and e-learning material on ICF physics
 - We will study how to address the issues of “**Gender Balance**” and “**Young Researchers**” in a concrete way. In the meantime, whenever possibly, we will give the responsibility of common initiatives (e.g. experiments to be done in large-scale laser facilities) to women and/or young researchers as a priority. We also will preferentially address them for STSM.