IFERC Newsletter

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International Fusion Energy Research Centre, Rokkasho, Aomori 039-3212, Japan

Meetings

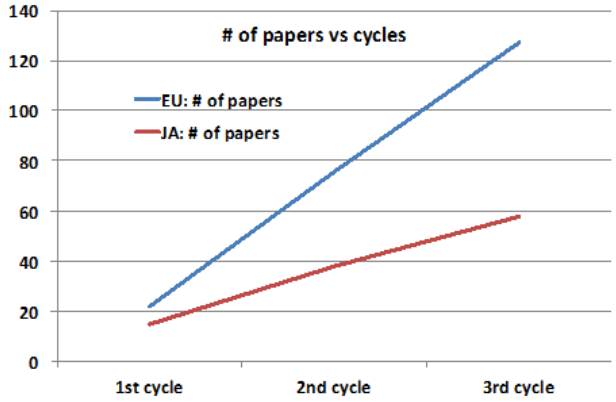
The 3rd Computational Simulation Centre (CSC) review meeting at Naka

During the afternoon of 9th March, the 3rd CSC review meeting was held at the JT60 site in Naka, where scientific highlights and a developing study, using an enhanced system with Many-Integrated Core (MIC), were presented by EU/JA users and a member of the High Level Support Team in Garching.

The 3rd CSC review meeting was the occasion to present the status of the CSC from three different points of view:

Operational: Jacques Noé, CSC leader, presented the evolution of the computer and its usage since the PC-15 in October 2014. The conclusion was that helios, the CSC computer, is working well and is highly used with more than 90% usage over the period.

Projects: Duarte Borba, Standing Committee EU Co-chair, reported on the work done by the Standing Committee. During the 6th meeting in 9-10 October 2014 in Garching, the resources of helios were allotted to the projects for the 4th cycle. During the 7th meeting in 9 March 2015, held via videoconference, the reports from the 3rd cycle projects were evaluated.



Scientific: Noriyoshi Nakajima, IFERC project leader, presented a statistical analysis of the outcome of the projects in the different fusion categories. A statistical database of the projects has been built together with the associated publications and presentations. The projects related to plasma physics, such as turbulence and MHD, are still the majority. The number of accepted or published peer reviewed papers in scientific journals originating from helios projects has been growing almost linearly over the first 3 cycles. One of the conclusions of the presentation was that "Helios shutdown will have a significant impact on fusion simulation."

The 3rd CSC review meeting was also the occasion for presentations by some helios users:

Akihiro Ishizawa, from NIFS, talked about the electromagnetic gyrokinetic simulation of turbulence in torus plasma. He compared simulations of tokamak plasmas and of helical plasmas from the point of view of the saturation of turbulence at finite-beta.

Yannick Sarazin, from CEA-IRFM, talked about improved confinement regimes in fusion plasma through some results from several EU projects. Control of edge localized modes (ELM) could be achieved by resonant magnetic perturbations (RMP). Simulations show that core confinement is improved by negative triangularity. This could explain internal transport barriers at JET.

Shin-ichi Satake, from Tokyo University of Science, talked in his presentation about a large scale MHD simulation on MIC co-processors on helios. Eventually, he presented his successes and difficulties on performing large scale DNS (direct numerical simulation) of turbulent pipe flow with parallel algorithms on multi-MIC. This port is one of the first large scale usage of MIC co-processors on helios.

Serhiy Mochalskyy, from HLST, presented some results on using the MIC co-processors on helios. He has studied the impact of having 2 MIC co-processors on each enhanced nodes. He has also compared the offload mode and the native mode on a specific test.

The 4th CSC Review Meeting will be held on 14 March 2016 in conjunction with the 18th IFERC PC meeting on 15-16 March 2016.

(CSC-L: Jacques Noé)