Contribution ID: **164** Type: **Invited**

Data reactor meets fusion reactor: a computational infrastructure for fusion study

Thursday, 30 November 2023 15:55 (25 minutes)

The study of nuclear fusion requires a massive amount of computing resource with highly divergent computing paradigm, including simulation, diagnostic, plasma control, AI computing, etc. To achieve the best performance, various tasks should be implemented on heterogeneous computing devices, typically CPUs and GPUs. The heterogeneity on the computing resources and computing paradigms brings obstacle for the researchers to implement and execute their computing programs efficiently.

Intelligent computing data reactor is a foundational computing infrastructure constructed by Zhejiang Lab to support scientific research. It aggregates multiple heterogeneous computing clusters which are suitable for high performance scientific computing tasks or AI computing tasks, respectively. The management of the resources and the scheduling of computing tasks are supported by ZJLab ALkaid, an operating system across multiple heterogeneous clusters. Moreover, ZJLab Alkaid encapsulates hundreds of computing frameworks, software modules and computing applications, which enables several domain specific computing platforms, including computational material, computational astronomy, computational genomics, etc. The data reactor integrates the computing hardware resources, the computing software stacks, and the computing service platforms to support cross-disciplinary study. By analogy to fusion reactor, the data reactor makes a reaction of computation to produce research outputs on the basis of data, algorithms, computing resources and domain knowledge. This talk aims to introduce the data reactor to the audience with fusion study background and discuss the progress and perspectives of the infrastructure on fusion study.

Member State or IGO/NGO

China

Speaker's Affiliation

Zhejiang Lab, Hangzhou

Primary author: YANG, Fei (Zhejiang Lab)

Co-authors: Prof. PAN, Aimin (Zhejiang Lab); Dr WEI, Yixiong (Zhejiang Lab); Prof. ZHAO, Zhifeng (Zhejiang Lab)

Presenter: YANG, Fei (Zhejiang Lab)

Track Classification: Enabling Infrastructure