Contribution ID: **1087** Contribution code: **THU-PO3-LN2-01** Type: **Poster**

A Flexible Control System Design of Pulsed High Magnetic Field Facility based on Physical Model

Thursday, 18 November 2021 10:00 (2 hours)

For generating diversified magnetic field waveforms, a flexible control system of Pulsed High Magnetic Field Facility (PHMFF) has been developed at Wuhan national pulsed High Magnetic Field Centre (WHMFC). Firstly, in order to describe various magnetic field systems, a general physical model composed of energy storage modules, load unit, transport circuits, and other auxiliary units is established in the paper. And then by defining control data objects, all elements in the model can be abstracted and encapsulated. Combined with the control data objects, physical model is converted to a software data model, which can be directly embed into the control system to realize the reorganization and flexible control of magnetic systems. Meanwhile, the whole process of the construction of magnetic field system, the control strategy and the dynamic allocation of resources are introduced. Benefit from the control system design, PHMFF is able to easily and efficiently construct different magnetic systems and generate variable magnetic field waveforms such as half-sine, flat-top and repetitive pulses based on single pulsed magnet, which greatly improves the efficiency of scientific experiments and reduces the cost of PHMFF.

Primary authors: LIU, Xiaojian (Huazhong University of Science and Technology); SHI, Jiangtao (Huazhong University of Science and Technology); XIE, jianfeng (Huazhong University of Science and Technology); LI, Liang (Huazhong University of Science and Technology); HAN, Xiaotao (Huazhong University of Science and Technology)

Presenter: HAN, Xiaotao (Huazhong University of Science and Technology)

Session Classification: THU-PO3-LN2 Late News II

Track Classification: C: Magnets for High-Field Facilities: C02 Resistive and Pulsed High-Field Magnets