Online: 7. Annual MT Meeting (part 2)



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Digital Twins and Surrogate Models for Efficient Interplay Between Fusion Experiment and Simulation

Wednesday 16 June 2021 16:40 (30 minutes)

https://desy.zoom.us/j/91209001554

Magnetic fusion physics is dominated by nonlinear, nonlocal, multiscale phenomena that are difficult to be understood from analytic theories or simple numerical simulations. Experiments have long been in need of first-principles-based information from large scale simulations prior to a new experiment and after new experimental observations. Inverse is also true: a new scientific discovery from first-principles simulations needs to be validated in experiments and used in the optimization of the experimental plasma. But, due to the human-in-the-loop workflow, these interplay processes have been extremely slow; taking weeks, months or even years. If we can minimize the human-in-the-loop interplay processes by using modern data-science technologies, we may be able to help ITER to achieve the 10-fold energy production goal much faster, hence, the realization of virtually limitless energy production with little environmental problem.

Presenter: CHANG, Choong-Seock

Session Classification: Plenary Session 2