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## Fast ML for fusion simulation, optimization, and control

*Tuesday 26 September 2023 11:00 (45 minutes)*

Magnetic confinement fusion research is at a threshold where the next generation of experiments are designed to deliver burning fusion plasmas with net energy gain for the first time. ML holds great promise in reducing the costs and risks of fusion reactor development, by enabling efficient workflows for scenario optimization, reactor design, and controller design. This talk reviews various aspects of ML applications in fusion science, ranging from simulation acceleration, controller design, event detection, and realtime diagnostics, punctuated by case studies of physics model ML-surrogates and novel RL-derived controllers.

**Presenter:** CITRIN, Jonathan

**Session Classification:** Invited Talks

**Track Classification:** Invited Talks