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Physics-constrained data-driven methods in MHD[1] ALAN KAP-TANOGLU, KYLE MORGAN, CHRISTOPHER HANSEN, STEVEN BRUNTON, University of Washington — Accurate and efficient plasma models are essential to understand and control experimental devices. Data-driven techniques recently developed in fluid dynamics can be leveraged to develop interpretable reduced-order models of plasmas that strike a balance between accuracy and efficiency. The dynamic mode decomposition, POD-Galerkin methods, and other reduced order models are applied to experimental and simulation data, and suggest possible uses in real-time control and modeling for fusion devices.

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