Abstract Submitted
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Current Profile Evolution Modeling via Subspace Identification Algorithms[1] C. XU, Y. OU, E. SCHUSTER, Lehigh U., J.R. FERRON, T.C. LUCE, M.L. WALKER, D.A. HUMPHREYS, General Atomics, T.A. CASPER, W.H. MEYER, LLNL — Feedback control in advanced tokamaks requires suitable mathematical models. First-principle modeling is sometimes limited by the lack of theoretical or experimental knowledge of some of the plasma properties. System identification arises as an alternative approach to first-principle modeling, and deals with the problem of generating dynamic models from measured input-output experimental data. We report progress on two identification problems; a bilinear identification (BiLinID) problem for the current ramp-up phase, and a linear identification (LinID) problem for the current flattop phase. Subspace identification, a newly emerging branch in system identification, is used in this work to generate databased models. The subspace identification method provides a state-space representation of the system, enabbling computational simplicity and effectiveness for multivariable systems.

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