Abstract Submitted
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Reassessment of impurity transport coefficients in Alcator C-Mod[1] M.A. CHILENSKI, M. GREENWALD, MIT Plasma Science and Fusion Center, Y. MARZOUK, MIT Department of Aeronautics and Astronautics, J.E. RICE, A.E. WHITE, MIT Plasma Science and Fusion Center — Transport coefficients D_Z, V_Z inferred from spectroscopic measurements of impurity injections are often used to validate simulations of turbulent transport. Existing methods for inferring D_Z, V_Z fall short in one or more ways, leading to incorrect results and calling the use of such measurements for validation into question. For instance, the use of too simple of a function to describe the D_Z, V_Z profiles leads to a dramatic underestimation of the uncertainty. This talk presents recent attempts to demonstrate some of these issues, estimate diagnostic requirements to determine impurity transport coefficients, and obtain rigorous uncertainty estimates on D_Z and V_Z. In particular, transport coefficients are inferred using the MultiNest algorithm and the critical question of the level of complexity in the D_Z, V_Z profiles which can be inferred is answered using the marginal likelihood. In addition to providing a useful framework for the solution of inverse problems relevant to the interpretation of experimental data, the use of these techniques will enable a reassessment of the ability of gyrokinetic simulations to match the impurity channel.

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Mark Chilenski
MIT Plasma Science and Fusion Center

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