

Developing synergy between multi-dimensional and 1D simulations of stellar convection

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Stars are complex objects involving many multi-dimensional processes like convection, rotation and magnetic fields. Ideally, we would like to model stars with 3D MHD simulations but it is unfortunately not feasible to simulate their entire evolution in 3D. We will thus always need 1D stellar evolution models to provide the necessary input for galactic chemical evolution and to study the cosmic impact of stars in general. In this talk, I will introduce a framework to develop synergy between 3D and 1D simulations, the so-called RA-ILES framework. I will end by presenting recent results obtained by applying this framework to convective boundary mixing, which is one of the most important uncertainties in the evolution of stars of all masses.