

Title:

Using Statistical Tools in Chemical Evolution Models

Abstract:

Chemical evolution is a large area covering many different scales. By trying to reproduce observational data, simulations and models are probing different physical processes responsible for the spatial dispersion of chemical elements. That includes, for example, boundary mixing in stars, turbulence in the interstellar medium, and galactic outflows in the intergalactic medium. However, it is important to be careful about the conclusions extracted from numerical predictions, as they might contain many uncertainties. Using a simple galactic chemical evolution model, I will present how statistical tools, such as Monte Carlo and Markov Chains, can help in deriving the uncertainties and the levels of confidence in numerical predictions. In particular, I will focus on the impact of uncertainties in the measurement of input parameters, the impact of using different modeling assumptions, and how to deal with free parameters.