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Connecting Nuclear Astrophysics to Cosmological Structure Formation

Monday 29 May 2017 12:00 (30 minutes)

Galactic chemical evolution is a multidisciplinary topic that involves nuclear physics, stellar evolution, galaxy evolution, and cosmology. Observations, experiments, and theories need to work together in order to build a comprehensive understanding of how the chemical elements synthesized in astronomical events are ejected and spread inside galaxies and recycled into new generations of stars. Nuclear physics provides nuclear reaction rates, stellar models provide the composition of stellar ejecta, galaxy models follow the evolution of chemical species driven by multiple stellar populations, cosmological simulations dictate how galaxies form and evolve in general, and observations provide constraints to test and improve numerical recipes driven by theories. During this talk, I will introduce the topic of galactic chemical evolution and present our efforts to create permanent connections between different fields of research (including nucleosynthesis and gravitational wave physics). Our ultimate goal is to better understand the origin of the elements in the universe and to explain the diverse chemical evolution patterns observed in nearby galaxies.

Author: CÔTÉ, Benoit

Presenter: CÔTÉ, Benoit

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