

**Tuesday,
April 6th
At 3:45 pm – Zoom mtg.**



From chiral interactions to neutron stars and why EFT truncation errors matter

Abstract: While recent advances in neutron star observations have the potential to constrain the properties of strongly interacting matter under extreme conditions, chiral effective field theory (EFT) has developed into a powerful framework for studying nuclear interactions and nuclear matter properties in the regime interesting for modeling neutron stars. In this colloquium, I will show how systematic chiral EFT calculations of the nuclear equation of state combined with Bayesian methods enable statistically meaningful comparisons between nuclear theory predictions, nuclear experiments, and observational constraints. In particular, I will review developments in many-body perturbation theory calculations at high orders and discuss BUQEYE's ("Bayesian Uncertainty Quantification: Errors in Your EFT") recent analysis of nuclear matter properties using a novel Bayesian framework for quantifying and propagating correlated EFT truncation errors. I will conclude the talk with implications of this statistical analysis for neutron star properties.

**CYCLOTRON
COLLOQUIUM
(Zoom Mtg)**

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**Christian
Drischler**

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**FRIB Theory
Fellow**

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**Michigan
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