Physics AT QUEENS COLLEGE

Colloquium Notice

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Museum of Natural History

Empirical approaches to the stellar age-rotation connection in the era of Big Data

Fifty years ago, astronomers discovered a relationship between stellar age and rotation: as stars grow older, they lose angular momentum and "spin down" — or, their rotation period gradually increases. Twenty years ago, the term "gyrochronology" was introduced to describe the metholodology of using a star's rotation period to determine its age. Empirical gyrochronology has to account for the peculiarities of individual stars, and has so far proved that there's no one-size-fits-all relation — but with more data, we can probe more regions of parameter space. Ten years ago, NASA's Kepler mission ended, providing the stellar astrophysics community with four-year continuous time series photometry for over 100,000 stars in one area of the sky. The data from Kepler opened up the study of gyrochronology, but also necessitated the development of new methods for rotation period detection and analysis. With data from ensuing missions K2 and TESS, opportunities to test gyrochronology have blossomed, and the challenges of this analysis have grown more complex. In this talk, I'll cover the history and foundations of gyrochronology, the state of the field, and my work developing software for detecting and classifying stellar rotation in data from the TESS mission.

Monday
November 20, 2023
Starts at 12:15 PM
Coffee at 12:00 PM
Physics Conference Room, SB B326
This talk is accessible via **Zoom** or use
meeting ID 829 2687 2594 and **passcode 866995** to join