University of Victoria

PHYSICS AND ASTRONOMY COLLOQUIUM (In Person Only)

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"Unraveling the journey of interstellar polycyclic aromatic hydrocarbons – from the cold interstellar medium to asteroids"

Abstract

Less than a hundred years ago astronomers believed that molecules could not survive in the harsh environment of interstellar space. However, advancements in radio astronomy completely changed our picture of the molecular universe. Today, over 300 molecules have been detected in the interstellar medium, including exotic and unstable species as well as many organic molecules that are also found on Earth. Of these, polycyclic aromatic hydrocarbons (PAHs) are expected to be the most abundant class of organic molecules in space; however, their interstellar lifecycle is poorly understood. I will present our recent detection of three isomers of cyanopyrene in our radio observations of the dense molecular cloud TMC-1, the largest molecules detected to date by radio astronomy! The high abundance of pyrene relative to other small aromatics detected so far in TMC-1 is difficult to explain using currently proposed chemical mechanisms. I will discuss future directions in unravelling PAH chemistry in the interstellar medium and the necessity of complementary laboratory measurements.

Wednesday, November 6, 2024
3:30 p.m. PST
BWC A104