



University
of Victoria

PHYSICS AND ASTRONOMY COLLOQUIUM (In Person Only)

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“The Dynamics of Comets, and Modified Gravity in the Solar System”

Abstracts

1. Comets have inspired awe since prehistoric times, but even today there are only a few thousand comets with well-determined orbits. Nevertheless, the analysis of this limited sample yields a compelling "standard model" for the formation, evolution and present distribution of comets. This model implies that the primary source of comets is the Oort cloud, containing over 100 billion comets at 5,000 to 100,000 times the Earth-Sun distance. I will review our current understanding of the history and structure of the Oort cloud.
2. The hypothesis that most of the matter in the universe is in some unknown dark form is fundamental to modern cosmology. A speculative alternative is that our understanding of the law of gravity is incomplete. The most influential theory of this kind is modified Newtonian dynamics (MOND), which postulates a breakdown of Newton's law of gravity below some critical acceleration threshold. We explore the predictions of the simplest version of MOND for the formation and evolution of the Oort cloud and conclude that this is not the correct description of gravity.

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