



Western

Western University
Department of Physics and Astronomy

PHYSICS & ASTRONOMY COLLOQUIUM

Date: **Thursday, 11th October 2018**
Time: **1:30 p.m.**
Location: **Physics & Astronomy Seminar Room 100**

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"Meteor shower predictions: Future Draconid Outbursts"

ABSTRACT

With the development of computational resources, meteor predictions based on numerical modelling of meteoroid streams have become commonly exploited. Within a virtual solar system, millions of simulated meteoroids are ejected from their parent comet and followed through time—sometimes for centuries—to determine if they could produce future observable meteor showers on Earth. Though this approach has seen much success regarding the prediction of the time and origin of observed meteor outbursts, shower intensity estimates are still difficult to determine reliably from such numerical simulations.

In this presentation, we will explore the advantages and pitfalls of the meteoroid stream modelling through the specific case of the October Draconids meteor shower. Independent predictions of the 2018 Draconids on Earth and its surroundings were performed by the Western Meteor Physics Group (WMPG) and the NASA Meteoroid Environment Office. Despite limited knowledge of the physical and dynamical properties of the parent body, our simulations were successful in predicting the time and intensity of the main optical Draconids events. All the simulations performed point towards an expected low meteor activity on Earth around midnight the coming 9th of October. However, very strong activity (with an equivalent on Earth of a few thousands of meteors per hour) is expected at the L1 and L2 Lagrange points the next 8th of October. The meteoroid flux around the Gaia spacecraft, orbiting around the L2 region, is particularly significant; the satellite risks to be impacted by large Draconid meteoroids, travelling with a velocity of about 20 km/s.

The Canadian Meteor Observation Radar (CMOR), as well as the optical detection systems deployed by the WMPG will observe the skies on October 8-9, 2018. Measurements performed by these instruments will allow us to confirm or reject our model's hypothesis and 2018 prediction.

HOST: P. G. Brown

COFFEE + light snacks will be available in the Atrium, 2nd floor, at 1:15 p.m.