



Interstellar Object: the ‘Oumuamua Conundrum

Date: March 9, 2022 (Wednesday)

Time: 10:00 a.m.

Zoom Online Lecture: <https://bit.ly/3Hccmha>

Meeting ID: 955 1065 6893

Password: 2859



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Abstract:

In 2017, astronomers detected an elongated object swinging past Earth on its way out of the solar system. The size and motion of ‘Oumuamua (roughly “scout” in Hawaiian) inspired a few excited researchers to suggest the visitation of an interstellar “spaceship.” We revisited this scenario's three key assumptions: 1) spacecraft removes the large population requirement, 2) solar sail is responsible for the non gravitational acceleration, and 3) a tumbling oblate spheroid accounts for the light curve. We show that such an object would 1) drift way off course during its passage through the turbulent, magnetized interstellar medium (similar to air dropping of pamphlets to intended targets on a gusty day), 2) endure comparable amount of radiation-driven acceleration in the anti-solar and sideway direction (contrary to their observed values), and 3) have extremely dim phases when the Sun crosses the surface plane of the thin hypothetical solar sail (analogous to Saturn's ring-plane crossing). Instead, we explore the physical nature of ‘Oumuamua and a vast fleet of its cohorts and show that they are likely to be the debris of tidally disrupted comets around common low-mass stars.



Biography:

Prof. Doug Lin's wide range of research interests include the formation and dynamics of planetary systems, star formation and interstellar medium, theory of accretion disks, formation and dynamics of star clusters, interacting galaxies, active galactic nuclei and black holes, and gravitational waves. Prof. Doug Lin received his BSc from McGill University and his PhD from the University of Cambridge. He joined the University of California at Santa Cruz in 1979, where he is now Emerita Professor. He was also the Founding Director of the Kavli Institute for Astronomy & Astrophysics at Peking University. He has been awarded the Brouwer Award of the Division on Dynamical Astronomy of the American Astronomical Society and the Bruce Medal of the Astronomical Society of the Pacific. He is a member of the American Academy of Arts and Science, an Honorary Fellow of the Royal Astronomical Society, and a Legacy Fellow of the American Astronomical Society.

Anyone interested is welcome to attend!

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