



University
of Victoria

PHYSICS AND ASTRONOMY SEMINAR (Online)

Dr. Frank van den Bosch
Yale University

“Dynamical Friction, Core Stalling & Dynamical Buoyancy”

Abstract

“Dynamical friction is a key process in galaxy evolution: it is responsible for the assembly and growth of dark matter halos, for galactic cannibalism, for the merging of super-massive black holes, and possibly for the formation of nuclear star clusters. Numerical simulations, though, have shown that dynamical friction disappears inside constant density cores, something that is not captured by the standard Chandrasekhar treatment of dynamical friction.

In this talk I will present two new approaches towards an improved understanding of dynamical friction at large, and of core stalling in particular. After highlighting the shortcomings of the standard formalism based on the Lynden-Bell Kalnajs (LBK) torque, I present a more general, self-consistent treatment and demonstrate that it reproduces all aspects of core stalling. Next I present a novel non-perturbative approach that gives valuable insight as to the workings of dynamical friction and dynamical buoyancy.

Time permitting, I will also show some new results on the origin of phase-spirals in the disk of the Milky Way.”

Thursday, March 3, 2022

11:00 a.m. PST

via Zoom: Zoom link will be shared on Tuesday