# A deeper look at the impact of minor mergers on the observable properties of the Milky Way

Gómez F. A.[1,2]

[1] *Departamento de Física y Astronomía, Universidad de la Serena, Av. Juan Cisternas 1200 N, La Serena, Chile*
[2] *Instituto de Investigación Multidisciplinar en Ciencia y Tecnología, Universidad de La Serena, Raúl Bitrán 1305, La Serena, Chile*

**Abstract** / During this talk I will present an overview of our recent work which aims to characterize the impact of host-satellite interactions on the observable properties of our Galaxy. Using simulations from the Auriga Project, a suite of fully cosmological simulations of the formation of Milky Way-mass galaxies, I will start by showing how low-mass low-velocity fly-by encounters can induce strong vertical perturbations on a pre-existing host disk. I will discuss the mechanism behind these perturbations and show how such an interaction could be enough to induce the formation of observed features such as the Monoceros Ring. Motivated by recent studies suggesting that the Large Magellanic Cloud (LMC) could be significantly more massive than previously thought, I will then explore whether the approximation of an inertial Galactocentric reference frame is still valid. I will show that previous estimates of the LMC's orbital period and apocentric distance, derived assuming a fixed Milky Way, are shortened if the Milky Way is allowed to freely move in response to the gravitational pull of the LMC. Due to this interaction, the Milky Way center of density can be strongly displaced in phase-space in a very short period of time. Such previously ignored interaction is likely to significantly affect both the orbit and phase space distribution of tidal debris from Milky Way satellites such as the Sagittarius dwarf galaxy. In addition, it can also affect previous estimates of the (timing) mass of the Local Group.

*Keywords* / Galaxy: disk — Galaxy: evolution — Galaxy: kinematics and dynamics — (galaxies:) Local Group — galaxies: interactions

*Contact* / fagomez@userena.cl

*Invited report*