



**IAUS-REG-NUMBER:** IAUS-106

**NAME:** Marco Laversveiler

**AFFILIATION:** Valongo Observatory - Federal University of Rio de Janeiro

**CONTRIBUTION:** Talk

**TITLE:** The Local Group Symbiotic Star Population and its Weak Relation with Type Ia Supernovae

**AUTHORS:** Marco Laversveiler and Denise R. Gonçalves

**AFFILIATIONS:** Valongo Observatory from the Federal University of Rio de Janeiro

**ABSTRACT:**

Symbiotic stars (SySt) are evolved binary systems in which a white dwarf (WD) accretes mass from the giant star, sometimes exhibiting collimated outflows and jets, with spectra and morphologies similar to planetary nebulae. Here, we study the SySt population and its controversial relation with type Ia supernovae (SNe Ia) in the galaxies of the Local Group (LG). Since a fraction of the WDs in SySt can become massive enough to reach the Chandrasekar mass, SySt have been considered as potential SNe Ia progenitors. This contribution is an attempt to pave this relation adopting two approaches: one empirical, based on the distribution and dynamics of the SySt in the Galaxy; and the other statistical one, for the LG dwarf galaxies. Per object, the main parameters involved are the initial mass function, the semi-major axis and mass-ratio distributions, the binary fraction and the stellar evolutionary channels. We estimated that the Galactic SySt population has a threshold empirical value of  $10^3$  and an expected statistical value of  $3 \times 10^4$ . For LG dwarf galaxies, the expected SySt population is 2 to 4 orders of magnitudes lower, depending mainly on the galaxy's bolometric magnitude. Concerning the SNe Ia, we clearly show that SySt are not their main progenitors. Moreover, we still expect that up to about 8% of the SNe Ia have symbiotic progenitors in the Milky Way, while the majority of the dwarf galaxies in the Local Group did not experience symbiotic type Ia supernovae.