

## IberiCOS 2022



Contribution ID : 27

Type : not specified

# L- $\sigma$ relation of Giant HII Regions and HII Galaxies as tracers of the Hubble expansion.

*Wednesday, 4 May 2022 14:30 (15)*

The relationship between the integrated  $H\beta$  line luminosity and the velocity dispersion of the ionized gas of HII galaxies (HIIGs) and giant HII regions (GHIIRs) has been known for a long time as the L- $\sigma$  relation (Terlevich et. al. 1981 and more recently Bordallo & Telles 2011 and Chavez et. al. 2014). The scatter in the relation is small enough that it can be used to determine cosmic distances independently of redshift and represents an interesting distance estimator that, in principle, can be used up to redshifts  $z \sim 4$ . Locally it can be used to obtain high precision measurements of the local Hubble parameter. This can be done using a sample of nearby ( $z \leq 0.1$ ) HIIGs galaxies and, crucially, an anchor sample of GHIIRs in nearby galaxies for which distances via primary indicators are available. I will be presenting our recent results of the use of the L- $\sigma$  relation to measure the local value of the Hubble constant (Fernández et. al. 2018) and to constrain the Dark Energy equation of State Parameter ( $w$ ) (González-Morán et. al. 2020,2021).

**Presenter(s)** : FERNANDEZ ARENAS, David (Instituto Nacional de Astrofísica, Óptica y Electrónica (INAOE))