ID 257

Tipo de Comunicación: Poster

Sesión Científica: Galaxias y cosmologia

Titulo: Physical Properties and SFHs of Low-Mass Star-Forming Galaxies at Intermediate Redshifts

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Resumen:

The epoch when low-mass star-forming galaxies (LMSFGs) form the bulk of their stellar mass is uncertain. While some models predict an early formation, others favor a delayed scenario until later ages of the Universe. We present improved constraints on the physical properties and star formation histories (SFHs) of a sample of intermediate redshift LMSFGs selected by their stellar mass or BCD-like properties. Our work takes advantage of the deep UV-to-FIR photometric coverage available on the Extended-Chandra Deep Field-South and our own dedicated deep VLT/VIMOS optical spectroscopy programs. On the one hand, we estimate the stellar masses (M*), SFRs, and SFHs of each galaxy modeling their spectral energy distributions using a novel approach that (1) consistently combines photometric (broad-band) and spectroscopic (emission line fluxes and equivalent widths) data, and (2) uses physically-motivated SFHs with non-uniform variations of the SFR as a function of time. On the other hand, we characterize the properties of their inter-stellar medium by analyzing the emission line features visible in the VIMOS spectroscopy. The final sample includes 91 spectroscopically confirmed LMSFGs ($7.3 \leq \log M^*/M_{sun} \leq 9.5$) at $0.3 < z < 1.0$. They present typical values of SFR consistent with the main sequence of star forming galaxies over 2 dex in stellar mass, and high sSFR. Furthermore, they are characterized by strong emission lines, low metallicity, and an enhanced level of excitation. Our selection criterion based on mass gathers galaxies within a wide range of properties and possibly different evolutionary stages. Despite the individual differences, the average SFH that we obtain suggests a late and fast (~2 Gyr prior their observation) assembly scenario for this type of system.