

## Studying nearby disk galaxies with the CALIFA survey

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### Abstract

CALIFA, the Calar Alto Legacy Integral Field Area survey, will provide the largest and most comprehensive wide-field IFU survey of galaxies carried out to date, combining the advantages of imaging and spectroscopy we will be able to understand the origin for the observed diversity of galaxies, and the physical mechanisms –intrinsic and environmental– that are responsible for the differences as well as similarities between them. We will observe a statistically well-defined sample of  $\sim 600$  galaxies in the local universe ( $0.005 < z < 0.03$ ) using 210 observing nights already awarded with the PMAS/PPAK integral field spectrophotometer, mounted on the Calar Alto 3.5 m telescope. PPAK offers a combination of extremely wide field-of-view ( $> 1 \text{ arcmin}^2$ ) with a high filling factor in one single pointing (65%), good spectral resolution, and wavelength sensitivity across the optical spectrum. The spectra will be covering the range 3700–7000 Å in two overlapping setups, one in the red (4300–7000 Å) at a spectral resolution of  $R \sim 1000$  and one in the blue (3700–5000 Å) at  $R \sim 2000$ . The fully reduced and flux calibrated data of this legacy survey will be made available to the public. Some of the defining science drivers for the CALIFA project are the star formation and the chemical history of galaxies; the study of the physical state of the interstellar medium; improve our knowledge on the stellar and gas kinematics in galaxies, and understand the influence of the AGNs on galaxy evolution. The CALIFA project comprises researchers from a large number of institutions worldwide: 8 institutions in Spain, 4 in Germany (CAHA funding countries) and 11 elsewhere, and includes a total of 56 researchers. CALIFA will provide a valuable bridge between large single-aperture surveys such as SDSS and more detailed studies of individual galaxies with PPAK (e.g. PINGS), SAURON, VIRUS-P, and other instruments.