

# The ALHAMBRA survey. First data release and first scientific results

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The ALHAMBRA (Advanced Large Homogeneous Area Medium-Band Redshift Astronomical) Survey (Molino et al. 2013) is a photometric survey covering  $2.8 \text{ deg}^2$  in 7 independent fields in the sky, to a depth of  $I_{AB} \sim 24.5$ . It uses a photometric system based on 20 contiguous optical filters  $\sim 300\text{\AA}$ , combining them with  $JHK_s$  imaging. The observations have been carried out with the Calar Alto 3.5m telescope. The filters have been specially designed to maximize the effective depth of the survey and to obtain very accurate photometric redshifts and spectral-type classification, providing a catalog with homogeneous selection function with redshift, extremely useful for galaxy evolution studies. The fields overlap with ancillary data (COSMOS, DEEP2, SDSS), enabling detailed testing of the photo-z procedure. Multicolor photometry and photometric redshifts are provided for  $\sim 438,000$  galaxies with precisions of  $\delta_z/(1+z) = 1\%$  for  $I_{AB} < 22.5$  and  $\delta_z/(1+z) = 1.4\%$  for  $22.5 < I_{AB} < 24.5$ .

In the talk, we explain the main characteristics of the survey and the first public release of the data along with the presentation of some of the first results on the evolution of galaxy clustering, galaxy segregation, cosmic variance for merger fraction studies, and the study of very high redshift objects.