Title : Measuring the redshift of dwarfs, low surface brightness and ultra-diffuse galaxies at OHP with MISTRAL.

Authors:

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Abstract:

Low-surface-brightness galaxies (LSBs) are much fainter than the typical night sky surfacebrightness. LSBs may represent at least 50% of all galaxies (Martin et al. 2019). Their extreme faintness hinders in-depth observations. In recent years, it has become possible to obtain deeper observations, allowing astronomers to study these galaxies with a new perspective. Recently, the discovery of massive numbers of ultra-diffuse galaxies (UDGs; van Dokkum et al. 2015) renewed our interests in LSB objects in general. UDGs have a large physical size typical of giant galaxies, with effective radii ranging from approximately 1 to 5 kpc. However, they have luminosity comparable to dwarf galaxies. The extreme nature and abundance of UDGs pose serious questions about their formation and evolution with several proposed scenarios for their origin (e.g., failed Milky Way-like galaxies, puffed-up dwarf galaxies, large DM spin halos).

Accurate distance measurements are crucial for the selection of UDGs (effective radius > 1.5 kpc) and to determine their physical properties. Obtaining a spectroscopic redshift for candidature UDGs is thus of paramount importance. After a test performed on 2 dwarfs from the COSMOS field, we obtained time to observe candidates UDGs at OHP with MISTRAL. We report here the measurements of 5 redshifts among 14 targeted sources. Although this number is small, it is important to realize that the number of UDGs with a confirmed redshift is of the order of 50. These detection allowed us to confirm the UDG nature of two galaxy, two are in fact regular dwarf galaxies, and one is a relatively distant giant LSB galaxy, another type of LSB galaxy, similar to e.g. Malin 1. The knowledge of the distance also allows us to determine physical parameters without ambiguity, what is necessary for their detailed analysis.