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A strong Lensing Model of SDSS J1029+2623: prospects for cosmography

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In the last years, thanks to the increased precision of the measurements of the Hubble constant, H_0 , some tension has emerged between measurements from local and early-Universe probes. Strong gravitational (SL) lenses with measured time delays between the multiple images are yielding a competitive approach to estimate H_0 , that is independent and complementary to other techniques. Such studies are extremely timely since upcoming surveys, like LSST, are expected to discover hundreds of variable sources multiply lensed by galaxy clusters.

I will present a new SL analysis of the galaxy cluster SDSS J1029+2623 at a redshift of $z=0.588$, which is one of the few known lens galaxy clusters with multiple images of a background ($z=2.1992$) quasar, with a measured time delay. I have used archival HST multicolour imaging and MUSE IFS to identify cluster members, measure the stellar velocity dispersions for the brightest of them, and spectroscopically confirm lensed sources. With the newly acquired data, we are able to build a detailed parametric lens mass model, that can shed new light on the known flux ratio anomaly between the quasar images, and give some prospects on the use of this cluster lens to constrain cosmological parameters.

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