
SOUL at LBT: commissioning results, science and future.

Enrico Pinna^{*†1,2}, Fabio Rossi¹, Guido Agapito¹, Cedric Plantet¹, Essna Ghose¹, Alfio Puglisi¹, Doug Miller³, Jennifer Power³, Barry Rothberg³, Gregory Taylor³, Juan Carlos Guerra³, Alessandro Cavallaro³, Michael Lefebvre³, Steve Ertel³, Amali Vaz⁴, Guido Brusa Zappellini³, Xianyu Zhang³, Matthieu Bec³, and Brandon Mechtley³

¹INAF - Osservatorio Astrofisico di Arcetri – Italy

²ADONI – Italy

³Large Binocular Telescope Observatory [Tucson] – United States

⁴Steward Observatory – United States

Abstract

The SOUL systems at the Large Binocular Telescope can be considered as pathfinders for the ELT SCAO systems, bringing together key technologies as EMCCD, Pyramid WFS and adaptive telescopes. After the first light of the first upgraded system on September 2018, going through COVID-19 and technical stops, we have now all the 4 systems working on sky. Here, we report about the results of the commissioning work, aimed to reach the nominal performances together with reliability for an optimal scientific production. The SOUL upgrade allows now to correct more modes in the bright end and increases the sky coverage on the faint end, opening to extragalactic targets. Finally, we will shortly review the first astrophysical results, looking forward to the next generation of instruments (SHARK-NIR, SHARK-Vis and iLocater), to exploit the SOUL WF correction.

Keywords: Pyramid:SCAO:NGS

*Speaker

†Corresponding author: enrico.pinna@inaf.it