

Astronomy meets photonics: a unique potential for the next decade

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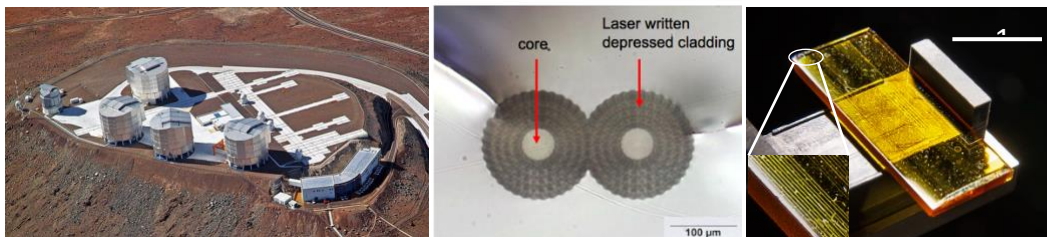


New discoveries in astronomy rely primarily on the astronomers' ability to develop and exploit new technologies to process and analyze the very few distant stellar photons collected by telescopes. On the other side photonics has demonstrated, through numerous applications, a strong potential to route and manipulate light, which can be seen as an appealing alternative to classical free space optics. For the last ten years, "astrophotonics" has brought together these two fields and tried to improve on the versatility, robustness and simplification of, otherwise, increasingly complex and bulky instruments onboard the 10m or future 40m telescopes.

In this talk, I will focus on the recent achievements of "photonics for astronomy" mainly in the infrared part of the spectrum. I will review some of the major constrains in observational astrophysics that we are facing when developing new astronomical instrumentation and attempt to give a perspective, based on examples applicable to techniques such as interferometry and coronagraphy, for future synergies that may profoundly impact optical and infrared instrumentation for ground- and space-based astronomy in the upcoming decade.

Keywords: high-angular resolution astronomy, infrared instrumentation, astrophotonics

Short bio: I am interested in studying star and planet formation mostly at infrared wavelengths and developing new instrumentation to explore these science cases. PhD in Physics & Astronomy from University of Grenoble-Joseph Fourier in 2006; Postdoc in Max-Planck Institute for Astronomy in Heidelberg until 2009, then Research Fellow at the Institute of Astrophysics of Canary Islands (Spain) until 2011. Faculty at the University of Cologne since then.



View of the Paranal observatory site and close look-up at integrated photonics beam combiners for interferometry