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Stellar Intensity Interferometry with Cherenkov telescope arrays: the forthcoming ASTRI-SI3 and prospects for the CTAO

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Stellar Intensity Interferometry (SII) is a second observing mode of Imaging Atmospheric Cherenkov telescopes (IACTs), where the large collecting area and ultra-fast data acquisition electronics of these instruments can be used to reconstruct images of stars at optical blue wavelengths. IACTs composed of several telescopes distributed over an area of hundreds of meters, such as the ASTRI Mini-Array and the Cherenkov Telescope Array Observatory (CTAO), will also have unique capabilities in terms of angular resolution and coverage of the U-V plane, making them complementary and competitive with the current generation of long-baseline optical interferometers. In this talk I will first present the ASTRI Stellar Intensity Interferometry Instrument (SI3). The instrument is designed to make accurate measurements of single photon arrival times (1 ns) in a very-narrow optical bandwidth (1-3 nm) centred on a wavelength in the range 420-500 nm. The 36 simultaneous baselines over distances between 100 m and 700 m provided by the ASTRI mini-array will allow angular resolutions of less than 100 microarcseconds. I will then summarize the potential scientific prospects of SII on the CTAO.

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