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Numerical simulations of a stellar intensity interferometer JANVIDA ROU, PAUL NUNEZ, DAVID KIEDA, STEPHAN LEBOHEC, University of Utah — The revival of stellar intensity interferometry may allow large arrays of gamma ray telescopes to reconstruct high resolution images of stars. Intensity interferometry measurements rely on the fact that the different Fourier components of the light collected at each telescope produce low frequency beats resulting in small intensity fluctuations displaying correlation between the different telescopes in an array. The correlations provide access to the squared degree of mutual coherence of the light at the different telescopes, which is related to the size and shape of the star via the Cittert-Zernike theorem. Here, we discuss our work toward a detailed and realistic numerical simulation of intensity interferometry with two telescopes, which provides insight into the effects of the finite size of the telescopes, the photodetectors and electronics response, and excess noise on the performances of future intensity interferometry experiments.

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