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Laboratory Simulation of Stellar Intensity Interferometry PATRICIA BOLAN, Boston College, ABIGAIL MCBRIDE, South Dakota School of Mines and Technology, NOLAN MATTHEWS, DAVID KIEDA, University of Utah — The field of Stellar Intensity Interferometry (SII) uses large telescopes to track intensity fluctuations from distant stars to create high resolution images of the source. The goal of this project was to explore SII methods using a simulated pseudo-thermal light source in the laboratory. A dynamically scattered laser beam is shone through pinholes, mimicking starlight. This light hits two photomultiplier tubes (PMTs), which convert photons to amplified current, and the spatial cross-correlation between the two signals is recorded over a multitude of baselines by moving one of the PMTs at gradual intervals. Different sized pinholes were experimented with, modelling both single and binary star systems. Information about the sources was retrieved through analysis of cross-correlation data. In the future, this method can be taken to a telescope array, providing a technique to see fine details and brightness distributions in stellar bodies that have been previously unobserved.

Patricia Bolan
Boston College

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