Abstract Submitted
for the DAMOP20 Meeting of
The American Physical Society

Experimental Mapping of Correlations of Structured Two Mode Squeezed Twin Beams[1] NIKUNJKUMAR PRAJAPATI, SAVANNAH CUOZZO, William Mary, LIOR COHEN, ELISHA SIDDIQUI, JONATHAN DOWLING, Louisiana State University, EUGENIY MIKHAILOV, IRINA NOVIKOVA, William Mary, WILLIAM AND MARY GROUP TEAM, LOUISIANAN STATE UNIVERSITY GROUP TEAM — We experimentally explore spatial and temporal correlations between two-mode squeezed twin beams which carry diverse spatial mode structure and are generated in hot Rb vapor via four-wave mixing. The phase matching conditions in FWM describe coherence areas in which correlations are expected, even for diverse mode structures. However, light with complicated structure is never truly single mode in nature and the coherence areas are complicated. In order to probe correlations of varying modes between the twin beams, we utilize machine learning and Monte-Carlo methods. This knowledge could allow for further enhancement of quantum imaging and quantum communications.

[1]Air Force Office of Scientific Research National Science Foundation

Nikunjkumar Prajapati
William
Mary College

Date submitted: 02 Feb 2020 Electronic form version 1.4