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Limits on parameter sensitivity using Quantum Ziv-Zakai bound BHASKAR ROY BARDHAN, KAUSHIK SESHADREESAN, HWANG LEE, JONATHAN DOWLING, Department of Physics and Astronomy, Louisiana State University — Quantum Ziv-Zakai bound provides a limit on the achievable precision depending on probability distribution characterizing the prior information of a binary decision problem. We investigate the limits for parameter sensitivity in quantum estimation theory for path-entangled photon Fock states. Based on the quantum Ziv-Zakai bound, we study some lower bounds on the sensitivity in an interferometric set-up, and verify our results considering the effects of repeated and adaptive measurements. We also compare the limits with the quantum Cramer-Rao bound for robust path-entangled Fock states for a given priority information.

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