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Multiplexing OAM states in an optical fiber: Increase bandwidth of quantum communication and QKD applications MANISH KUMAR GUPTA[1], JONATHAN P. DOWLING[2], Hearne Institute for Theoretical Physics, Department of Physics and Astronomy — We propose a noble method for multiplexing OAM states to increase bandwidth of communication in a birefringent single-mode optical fiber for quantum communication and QKD applications by minimizing the decoherence. We analytically derive and show that the rate of decoherence for OAM state in a birefringent optical fiber is proportional to l^2. We also show numerically that decoherence can be minimized with CPMG pulse sequence to preserve the state with $> 90\%$ fidelity for smaller values of l to allow for high-bandwidth communication.

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