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**Saving entangled photons from sudden death is a single-mode fiber — Interplay of Decoherence and dynamical decoupling.**<sup>1</sup> MANISH KUMAR GUPTA, CHENGLONG YOU, JONATHAN P. DOWLING, HWANG LEE, Louisiana State Univ - Baton Rouge — We study the dynamics of decoherence in an optical fiber for the case of entangled photons. Such a study will allow us to increase the physical length of fiber for transmission of entangled photon from the sources such as SPDC. We analytically derive the model for Decoherence of entangled state photons in a single-mode fiber. We also show that entanglement lifetime can be increased for Bell state and Werner state with open loop control technique called Dynamical decoupling.

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