

Abstract Submitted  
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**Quantum Sensing in the Presence of Realistic Attenuation<sup>1</sup>**

YAAKOV WEINSTEIN, GERALD GILBERT, MITRE Quantum Information Science Group — Quantum entangled states can be used to beat the standard quantum limit on the variance of a measurement and to beat the Rayleigh limit on resolution. These phenomena are known as supersensitivity and superresolution, respectively. We demonstrate that photonic implementation of either supersensitivity or superresolution will not be successful in the presence of realistic attenuating atmospheres. This is true even when superresolution is attempted with unentangled photons.

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