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Free-space quantum key distribution at a wavelength of 10.6 µm using continuous variables

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When light is transmitted through the atmosphere, it is scattered by atmospheric particles. This limitation of free-space optical channels can be counteracted by using a wavelength longer than the atmospheric particle size, where these losses are heavily reduced. Here, we present a free-space quantum key distribution system at a wavelength of 10.6 µm using continuous variables. We investigate the performance of the available technology regarding quantum-limited measurements and study the feasibility of this wavelength for atmospheric quantum communication.