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Dear Editor,

please find enclosed a manuscript on "Practical Photonic Quantum Sensing with Thermal Light".

In this work, we demonstrate that the temporal correlations in "simple" thermal light that shows photon bunching can be used to perform tasks that are often addressed with quantum sensing, e.g. by using photon pairs from parametric down conversion processes. The use of the photon bunching property in thermal light significantly simplifies such sensing applications, and helps to showcase that correlations that have been used by Hanburry-Brown and Twiss in stellar interferometry can be also used for relatively benign quantum sensing applications - in our case a simple distance measurement or range finding example, based on a simple laser we operate just below threshold.

The underlying physics behind our demonstration is relatively simple, and should be accessible to everyone who looked into photon statistics properties of thermal light. The fact that we use this might inspire other measurements that mostly rely on temporal correlations.

As such, we feel that this concept is of interest to a wide spectrum of researchers involved in contemporary quantum technologies or even optical measurement techniques. The key idea is fundamentally rooted in basic physics, so we like to ask you to consider this work for publication in nature physics.

Possible referees for this work could be John Rarity (University of Bristol), Nicolas Treps (Sorbonne), R. Boyd (University of Rochester), Paolo Villoresi (University of Padova), Christoph Marquardt (Max Planck Institute for the Science of Light).

We are looking forward to your reply.

With Best Regards,

Christian Kurtsiefer