

- Routine heterodyne operation within a factor of two of the fundamental shot noise limit was achieved.
- The first high-quality radiometric heterodyne measurements were made using a thermoelectrically cooled detector. Performance was demonstrated to be within five times of the shot noise limit. This result opens the way for LHSR systems without the need for cryogenic cooling.

The successful demonstration and performance assessment of optical photomixing based on hollow waveguide architecture was a prerequisite before undertaking development of a fully integrated LHSR. Using a hollow waveguide for optical mixing supersedes the traditional “free-space” optical way and therefore future work will include the development of a fully optically integrated instrument.

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