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Local observation of pair-condensation in a Fermi gas at unitarity
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Swinburne University of Technology — Ultracold Fermi gases near a Feshbach resonance provide a means to investigate the physics of strongly interacting quantum systems. Through the use of spatially resolved Bragg spectroscopy we are able to measure the homogenous density-density response function of a Fermi gas at unitarity. The resulting Bragg response provides a clear signature of pair-condensation at temperatures below the superfluid transition temperature. The method used to obtain the local measurement is generalizable to any homogenous parameter which satisfies the local density approximation, providing a new tool that can be used where techniques such as the inverse-Abel transform are no longer applicable.

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