

Abstract Submitted
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Observation of Phase Separation in a Strongly-Interacting Imbalanced Fermi Gas¹ ANDRE SCHIROTZEK, YONG-IL SHIN, MARTIN ZWIERLEIN, CHRISTIAN SCHUNCK, WOLFGANG KETTERLE, MIT — We have observed phase separation between the superfluid and the normal component in a strongly interacting Fermi gas with imbalanced spin populations. The in situ distribution of the density difference between two trapped spin components is obtained using phase-contrast imaging and 3D image reconstruction. A shell structure is clearly identified where the superfluid region of equal densities is surrounded by a normal gas of unequal densities. The phase transition induces a dramatic change in the density profiles as excess fermions are expelled from the superfluid.

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