

Abstract Submitted
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Controlling spin current in a trapped Fermi gas XU DU, YINGYI ZHANG, JESSIE PETRICKA, LE LUO, BASON CLANCY, JOHN THOMAS, Duke University — We observe fundamental new features of spin current in a weakly interacting Fermi gas of ${}^6\text{Li}$. By creating a spin current and then reversing its flow, we demonstrate control of the spin current. This reversal is predicted by an undamped spin wave theory, which we have developed to explain our previous observation of spin segregation in a trapped Fermi gas. Numerical calculations based on this theory are in very good agreement with the experimental results both in amplitude and temporal evolution. The theory provides a simple physical description of the origin of the spin current and suggests that broad control of the spin current is possible. References: [1] X. Du *et al.*, Phys. Rev. Lett. 101, 150401 (2008).

Xu Du
Duke University

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