

Dr Jacek Dziarmaga
Institute of Physics
Jagiellonian University
Reymonta 4
30-059 Krakow
Poland

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Scientific Report

I visited for 7 days the Institute of Theoretical Physics, University of Hannover in Germany (host: Prof. Maciej Lewenstein). This time was spent to complete research on laser cooling of trapped ultracold fermionic atoms. This work is in the final stage of preparation for publication. It will be submitted to Physical Review A: Rapid Communications.

In this work numerical simulations for realistic experimental parameters demonstrate that laser cooling on the repulsive side of the Feshbach resonance can drive fermions much below the condensation temperature for molecules. For the assumed set of experimental parameters the transition takes place at around $0.5 T_F$, and laser cooling can drive the system down to at least $0.09 T_F$ in a time of a few seconds. Condensate growth is self-consistently included in the simulations

Yours sincerely,

Jacek Dziarmaga