

Abstract Submitted  
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**Cooling without contact in bilayer dipolar Fermi gases<sup>1</sup>** BILAL TANATAR, BASAK RENKLIOGLU, M. OZGUR OKTEL, Bilkent University — We consider two parallel layers of dipolar ultracold Fermi gases at different temperatures and calculate the heat transfer between them. The effective interactions describing screening and correlation effects between the dipoles in a single layer are modelled within the Euler-Lagrange Fermi-hypernetted chain approximation. The random-phase approximation is employed for the interactions across the layers. We investigate the amount of transferred power between the layers as a function of the temperature difference. Energy transfer proceeds via the long-range dipole-dipole interactions. A simple thermal model is developed to investigate the feasibility of using the contactless sympathetic cooling of the ultracold polar atoms/molecules. Our calculations indicate that dipolar heat transfer is effective for typical polar molecule experiments and may be utilized as a cooling process.

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