

Abstract Submitted  
for the DPP11 Meeting of  
The American Physical Society

**Diffusion of strongly correlated plasmas in a magnetic field**<sup>1</sup> TORBEN OTT, MICHAEL BONITZ, Institute of Theoretical Physics and Astrophysics, University Kiel — The self-diffusion properties of dusty plasmas and non-neutral plasmas are of basic importance for a detailed understanding of the dynamics of these systems. In the presence of a magnetic field, the diffusion coefficients for field-parallel and cross-field diffusion need to be investigated separately. We present a molecular dynamics study of a one-component plasma which is both strongly coupled ( $\Gamma > 1$ ) and subjected to a strong magnetic field ( $\omega_c/\omega_p > 1$ ). As in a weakly coupled plasma, the cross-field diffusion scales as  $1/B$  in the strong-field limit. The field-parallel diffusion is also strongly affected by the magnetic field and approaches a  $1/B$  scaling, in contrast to earlier predictions.

[1] T. Ott, M. Bonitz, arXiv:1106.3717 [physics.plasm-ph]

<sup>1</sup>Supported by the DFG via SFB-TR 24 and a grant for CPU time at the North-German Supercomputing Alliance.

Torben Ott  
Institute of Theoretical Physics and Astrophysics, University Kiel

Date submitted: 26 Jul 2011

Electronic form version 1.4