

Abstract Submitted  
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**Collisional enhancement of wakes in streaming complex plasma<sup>1</sup>**

SITA SUNDAR, HANNO KAEHLERT, JAN-PHILIP JOOST, PATRICK LUDWIG, MICHAEL BONITZ, Christian-Albrechts-Universitaet zu Kiel — Wake effect and dynamical screening of grains in streaming plasmas have received considerable attention over the years from experimentalists as well as theoreticians. However, recently it was shown that the characteristic features of the wake potential for flowing non-Maxwellian plasma are qualitatively distinct from Maxwellian streaming ions. The difference observed is due to the modification in the distribution function itself during collisions and the presence of external fields. Herein, we compute the electrostatic potential of a dust grain in collisional streaming ions using 3D particle-in-cell(PIC) code ‘COPTIC’ [1] and Linear Response (LR) theory. In contrast to the Maxwellian case, simulations demonstrate the enhancement of the wake potential with collisionality for the non-Maxwellian streaming plasmas. We investigate the effect of collisions and compare our results with the wake potential obtained from the LR formalism for Maxwellian and non-Maxwellian cases. We discuss the physics of distribution function and flux around the grain and present a parametric study of collision frequency  $\nu$  vs. wake peak characteristics. [1] I H Hutchinson Phys. Plasmas **18**, 032111 (2011).

<sup>1</sup>DFG via SFB-TR24, Project A9

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