P 15: Poster: Laserplasmen und Quantenplasmen

Zeit: Donnerstag 14:00–16:00 Raum: Poster EG

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Dust grain charging in the wake of other grains — •Dietmar Block[1] and Wojciech Miloch[2] — [1]IEAP der CAU Kiel, Leibnizstr. 19, 24118 Kiel, Germany — [2]Dept. of Physics, University Olso, N-0316 Oslo, Norway

Recent experiments have shown that two aligned grains in a plasma flow are charged differently. In this contribution, we address the problem of the charge distribution in two- and multiple grain arrangements in sonic and supersonic collisionless plasma flows by means of self-consistent numerical particle-in-cell (PIC) simulations. First, the charging of a system of two gains is studied for a range of flow velocities and intergrain distances. Second, a third aligned grain is added and its charging process is investigated in detail. In a third step, we investigate the charging of a grain below a layer of grains. Finally a cluster of 15 grains is studied. Thus, our simulations systematically investigate the influence of the local neighborhood on the charging processes for situations which differ in complexity.

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Progress on a Positron Accumulation Experiment (PAX) — Thomas Sunn Pedersen[1], Xabier Sarasola[1], Uwe Hergenhahn[1], Norbert Paschkowski[1], •Eve Stenson[1], Felix Schauer[1], Gerrit H. Marx[2], Lutz Schweikhard[2], Christoph Hugenschmidt[3], James R. Danielson[4], and Clifford M. Surko[4] — [1]Max Planck Institute for Plasma Physics, EURATOM Association, Wendelsteinstr. 1, 17491 Greifswald, Germany — [2]Institute for Physics, Ernst-Moritz-Arndt University, 17487 Greifswald, Germany — [3]FRM II and Physics Department, Technische Universität München, Garching, Germany — [4]Department of Physics, University of California, San Diego, La Jolla CA, U.S.A.

Positrons have exposed new phenomena in atomic physics, been used as the ingredients for the creation of anti-atoms, and proved to be valuable tools for a variety of material diagnostics; they also represent the limiting ingredient in the formation of an electron-positron pair plasma. These plasmas have been an object of theoretical inquiry for decades but have not yet been created in the laboratory. In recent years, key technological advancements have been made in such areas as the manipulation of non-neutral plasmas, the strength of positron sources, and the development of magnetic field configurations that can confine both non-neutral and quasi-neutral plasmas. By combining these elements, an experiment — currently being assembled — hopes to first accumulate unprecedented numbers of positrons (with potential applications to materials science, atomic physics, etc.) and then use them to fuel an electron-positron plasma (the world's first).