



# Berliner Physikalisches Kolloquium

im Magnus-Haus, Am Kupfergraben 7, 10117 Berlin

Eine gemeinsame Veranstaltung der Physikalischen Gesellschaft zu Berlin e.V.,  
der Freien Universität Berlin, der Humboldt-Universität zu Berlin,  
der Technischen Universität Berlin und der Universität Potsdam  
– gefördert durch die Wilhelm und Else Heraeus-Stiftung –

Am Donnerstag, dem **11. Februar 2021**, um **18:30 Uhr**

spricht

**Prof. Dr. Thomas Sunn Pedersen**  
**Max-Planck-Institut für Plasmaphysik, Greifswald**

über das Thema

**„Plans for the creation of electron-positron plasmas  
in the laboratory“**

Moderation: Robert Wolf, Technische Universität Berlin und  
Max-Planck-Institut für Plasmaphysik, Greifswald

We describe here efforts to create and study magnetized electron-positron pair plasmas, the existence of which in astrophysical environments is well-established. Laboratory incarnations of such systems are becoming ever more possible due to novel approaches and techniques in plasma, beam, and laser physics. Traditional magnetized plasmas studied to date, both in nature and in the laboratory, exhibit a host of different wave types, many of which are generically unstable and evolve into turbulence or violent instabilities. This complexity and the instability of these waves stem to a large degree from the difference in mass between the positively and the negatively charged species: the ions and the electrons. The mass symmetry of pair plasmas results in unique behavior, a topic that has been intensively studied theoretically and numerically for decades, but experimental studies are still in the early stages of development. A levitated dipole device is now under construction to study magnetized low-energy, short-Debye-length electron-positron plasmas; this experiment, as well as a stellarator device that is in the planning stage, will be fueled by a reactor-based positron source and make use of state-of-the-art positron cooling and storage techniques. We provide a status report on this project, and discuss the unique physics insights that can be gained by these studies.

Auch zu lesen im Internet: <http://www.pgzb.tu-berlin.de/>