

Atomphysik-Seminar

Wednesday, January 17, 13.15, KBW Lecture Hall - Side Room

Laser cooling of stored heavy ions

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Laser cooling is a very powerful method to obtain very cold ensembles of particles (atoms, ions, sometimes even molecules). However, concerning charged particles, this is mostly true for light ions in low charge states and at low velocities. Here, I will address the opposite sides of these cases, i.e. heavy ions in high charge states and at very high velocities. Laser cooling is then not used to slow down the particles to rest, but to reduce their longitudinal temperature (velocity spread) at a fixed velocity, which is close to the speed of light (c). In this research field, accelerator physics meets atomic physics and laser physics. We require the best of all fields to obtain the coolest results. In my talk I will start with the interest in heavy ions from the atomic physics perspective (laser spectroscopy), discuss the ingredients for laser cooling, show some important results (ESR @ GSI), and finally present our plans for the future (FAIR).