



QuantumFrontiers
Light and Matter at the Quantum Frontier:
Foundations of and Applications in Metrology



Guest Talk

Thursday, 20 February 2020, 10:00 am

Physikalisch-Technische Bundesanstalt, Bundesallee 100, 38116 Braunschweig
Raumzellenbau 11 (RZB XI), Room 113

Characterization of micromotion and its influence on systematic frequency shifts on the quadrupole transition of trapped Ca^+ ions

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Trapping and laser cooling of ion or multiple ions within a Paul ion trap is the key method used to reach the atomic ground-state. In this state, the quadrupole clock transition line has its narrowest spectral profile, however micromotion of the ion, driven by the radiofrequency field of the trap, still causes unwanted broadening.

The aim of the thesis is to characterise the electric field inside the linear Paul trap based at ISI Brno. The following task is to measure residual micromotion of the trapped ion in three spatial axes. Consequently, the influence of the measured residual micromotion on the related frequency shifts will be estimated.