DAMOP11-2011-000533

Abstract for an Invited Paper
for the DAMOP11 Meeting of
the American Physical Society

Concepts for an optical nuclear clock with Th-229

EKKEHARD PEIK, PTB

The transition between the nuclear ground state and the low-lying isomeric state in Th-229 at about 160 nm wavelength will allow to apply methods of high-resolution laser spectroscopy to a nuclear excitation, opening a new field at the border between atomic and nuclear physics. It also offers the potential for a highly precise optical clock using this transition frequency as a reference. I will describe these concepts and, more specifically, our experiment towards a two-photon excitation of the nuclear transition in Th^+ ions, using electron bridge processes within the dense electronic level structure of this ion.