



Library Indian Institute of Science Education and Research Mohali



DSpace@IISERMohali (/jspui/)
/ Publications of IISER Mohali (/jspui/handle/123456789/4)
/ Research Articles (/jspui/handle/123456789/9)

Please use this identifier to cite or link to this item: <http://hdl.handle.net/123456789/248>

Title:	Multipolar Black Body Radiation Shifts for the Single Ion BASED Optical frequency standards,Clocks
Authors:	Arora, Bindiya (/jspui/browse?type=author&value=Arora%2C+Bindiya)
Issue Date:	2012
Publisher:	The American Physical Society
Citation:	Phys. Rev. A 85, 012506
Abstract:	Appraising the projected 10^{-18} fractional uncertainty in the optical frequency standards using singly ionized ions, we estimate the black-body radiation (BBR) shifts due to the magnetic dipole (M1) and electric quadrupole (E2) multipoles of the magnetic and electric fields, respectively. Multipolar scalar polarizabilities are determined for the singly ionized calcium (Ca^{+}) and strontium (Sr^{+}) ions using the relativistic coupled-cluster method; though the theory can be exercised for any single ion clock proposal. The expected energy shifts for the respective clock transitions are estimated to be $4.38(3) \times 10^{-4}$ Hz for Ca^{+} and $9.50(7) \times 10^{-5}$ Hz for Sr^{+} . These shifts are large enough and may be prerequisite for the frequency standards to achieve the foreseen 10^{-18} precision goal.
Description:	Only IISERM authors are available in the record.
URI:	http://pra.aps.org/pdf/PRA/v85/i1/e012506 (http://pra.aps.org/pdf/PRA/v85/i1/e012506) http://arxiv.org/abs/1108.1639 (http://arxiv.org/abs/1108.1639)
Appears in Collections:	Research Articles (/jspui/handle/123456789/9)

Files in This Item:

File	Description	Size	Format	
Need to add pdf.odt (/jspui/bitstream/123456789/248/3/Need%20to%20add%20pdf.odt)		8.63 kB	OpenDocument Text	View/Open (/jspui/bitstream/123456789/248/3/Need%20to%20add%20pdf.odt)

[Show full item record \(/jspui/handle/123456789/248?mode=full\)](/jspui/handle/123456789/248?mode=full)

[Statistics \(/jspui/handle/123456789/248/statistics\)](/jspui/handle/123456789/248/statistics)

Items in DSpace are protected by copyright, with all rights reserved, unless otherwise indicated.