

Abstract Submitted
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Atomic properties of Lu^+ for a development of an optical clock.¹

SERGEY PORSEV, University of Delaware, ULYANA SAFRONOVA, University of Nevada in Reno, MARIANNA SAFRONOVA, University of Delaware — The singly-ionized lutetium has a number of fortuitous properties well suited for clock applications. The highly forbidden $^1S_0 - ^3D_1$ $M1$ clock transition was studied in [1,2] and, in particular, it was shown that it has a very small blackbody radiation (BBR) shift [2]. In this work, we continue to study Lu^+ properties [3] relevant to a development of this optical clock, including static and dynamic polarizabilities, dynamic contribution to the BBR shift, $E1$, $E2$, and $M1$ transition probabilities. Our calculations also demonstrate that Lu^+ is a good candidate to search for variation of the fine-structure constant. The details of the calculations will be reported at the conference. [1] M. D. Barrett, New J. Phys. 17, 053024 (2015). [2] K. Arnold et al., Phys. Rev. A 92, 032108 (2015). [3] E. Paez et. al., Phys. Rev. A 93, 042112 (2016).

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