

Abstract Submitted
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Autoionization resonances of lanthanide ions in the vicinity of 6.X nm spectral range SINDHU KALYADAN, A. KUMAR, H.R. VARMA, School of Basic Sciences, Indian Institute of Technology Mandi, India, P. HAYDEN, J.T. COSTELLO, School of Physical Sciences and NCPST, Dublin City University, Ireland, P.C. DESHMUKH, School of Basic Sciences, Indian Institute of Technology Mandi and Department of Physics, Indian Institute of Technology Madras, India — We report autoionization resonance studies of some lanthanide ions in the vicinity of the 6.X nm spectral range. Studies of the resonances in this spectral range have attracted considerable attention recently due to their importance in developing next generation extreme ultraviolet (EUV) lithography light sources [1, 2]. The resonance structures result from the interference of “bound to continuum” ionization channels from the 5s subshell and the “bound to bound” excitation channels from the 4d subshells of some of the lanthanide ions. We employ the relativistic random phase approximation (RRPA) [3] to obtain multichannel quantum defect parameters and then use the relativistic multichannel quantum defect theory (RMQDT) [4] to investigate the autoionization resonances in Ce XI, La X and Pr XII.

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