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Temperature dependence of the depolarization rates of Ne*(2p$_i$ [J=1]) atoms induced by helium atom collisions CRISTIAN BAHRIM, Department of Physics, Lamar University, VAIBHAV KHADILKAR, Department of Computer Science, UT Dallas, HIRAKU MATSUKUMA, MASAHIRO HASUO, Department of Mechanical Engineering and Science, Kyoto University — Theoretical depolarization rates for disalignment, disorientation, and alignment destruction of the Ne*(2p$_i$ [J=1]) atoms at temperatures between 10 K and 3000 K are compared with measurements done in Ne-He glow discharges. We perform quantum close-coupling many-channel calculations using a molecular approach for the interaction between Ne*(2p$_i$ [J=1]) and He atoms [1]. Excellent agreement between our calculations and experimental data above 77 K [1, 2] is found for all the J = 1 states. For the 2p$_5$ and 2p$_7$ states this agreement is found even down to 20K. The temperature dependence of the depolarization rates can be explained using the anisotropy of the molecular channels [2]. However for the Ne*(2p$_{10}$ [J=1]) atoms, our disalignment rate coefficients are larger than the measurements recently reported in [3] after the radiation re-absorption is subtracted from the disalignment rates. In this paper we carefully address this issue.
[1] Bahrim C, and Khadilkar V 2009 *Phys Rev A* **79** 042715. [2] Khadilkar V, and Bahrim C 2010 *J Phys B* **43** 235209. [3] Matsukuma H, Shikama T, and Hasuo M 2011 *J Phys B* **44** 075206.

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