Abstract Submitted
for the GEC10 Meeting of
The American Physical Society

**Charge-transfer cross section in the Li-Li+ system** BOUCHELAGHEM FOUZIA, Radiation Physics Laboratory, Unniversité Badji Mokhtar Annaba 23000, Algeria, BOULEDROUA MONCEF, Faculté de Médecine and Laboratoire de physique des Rayonnement, Badji Mokhtar Annaba 23000, Algeria — This work deals theoretically with the charge exchange cross section computed for the system Li-$Li^+$. Assuming a very low electric field, the calculations are performed quantum mechanically within the Chapman-Enskog model (L.E. Reichel, *A Modern Course in Statistical Physics* University of Texas Press, Austin, 1984). The calculations start by constructing the ion-atom potentials and, with this system, the collisional dynamics are determined by the molecular $^2\Sigma_g^+$ and $^2\Sigma_u^+$ states (J.N. Bradsley *et al.* Phys. Rev. A **11,** 1911 (1975)). The gerade and ungerade potential-energy curves are shown in Fig. 1. The potentials are further used to solve the radial wave equation and therefore to determine the phase shifts. These phase shifts have been used to compute the elastic and charge-transfer cross sections. For illustration, the charge-transfer cross section for the scattering at low energies in the $^2\Sigma_g^+$ and $^2\Sigma_u^+$ states are presented in Fig. 2.

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Date submitted: 14 Jun 2010 Electronic form version 1.4