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Trsnsition from a T-shape to a symmetric structure in the Coulomb four body problem close to threshold AGAPI EMMANOUILIDOU, Georgia Institute of Technology, JAN MICHAEL ROST, Max Planck Institute for Complex Systems, Dresden — In a classical framework, we present a theoretical study for the photo-fragmentation process for the four-body Coulomb problem. Specifically, we explore the angular distribution of the inter-electronic angle of the escaping electrons in the photoionization process from the ground state of Lithium, close to threshold. According to Wannier's theory the inter-electronic angle is 120° at threshold. Surprisingly, we find that the inter-electronic angular distribution has a double hump structure with peaks at 90° and 180° at $E = 0.9$ eV. We find that as the excess energy decreases this double hump structure shifts to an almost single hump structure with a peak at 120° at $E = 0.1$ eV, with the latter structure more closely resembling the one predicted by Wannier. This double hump structure is quite unexpected since it takes place in the energy range where we find the Wannier threshold law to be valid with an exponent of $\alpha = 2.16$ [1]. We can understand this T-shape structure in terms of an innovative classification scheme we have previously introduced [2]. Our scheme groups the triple ionizing trajectories according to their sequence of momentum transferring electron-electron collisions. [1] A.Emmanouilidou and J.M. Rost, "Triple photoionization of Lithium close to threshold" accepted as Letter in J.Phys.B. [2] A.Emmanouilidou and J.M. Rost, "Multi-electron collision dynamics and the Coulomb four-body problem in a classical framework" submitted.

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