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Decrease of Coulomb Barrier Height due to Charge Polarization for Cold Fusion Reactions AKIRA IWAMOTO, TAKATOSHI ICHIKAWA, Japan Atomic Energy Research Institute — We estimate the decrease of Coulomb-barrier height between colliding partners due to static charge polarization in the entrance channel of cold-fusion reactions [1]. Charge displacement between protons and neutrons is modeled as the sum of two components, one is surface-type and the other is volume-type. The strength of both types of polarization is determined by the energy-balance between the decrease of mutual Coulomb energy and the increase of self-energies for both target and projectile. It is shown that the surface-type-dominant polarization for light nuclei changes gradually toward comparable surface-and-volume polarization for heavy nuclei, which feature is similar to what was obtained in the study of giant dipole resonance [2]. Although the strength of the induced polarization is not large, the decrease of the Coulomb barrier height amounts to 1 to 2 MeV for typical cold-fusion reactions, which is not negligible in fine tuning of the most-favorable incident energies to synthesize super-heavy elements. [1] Takatoshi Ichikawa and Akira Iwamoto, Phy. Rev. C, in press. [2] W.D. Myers, W.J. Swiatecki, T. Kodama, E.J. El-Jaick and E.R. Hilf., Phys. Rev. C **1**5, 2032 (1977).

Akira Iwamoto
Japan Atomic Energy Research Institute

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