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Coupled-channels Calculations of Heavy-ion Fusion at Extreme Sub-barrier Energies.[1] HENNING ESBENSEN, Physics Division, Argonne National Laboratory, ŞERBAN MIŞICU, Institute for Nuclear Physics, Bucharest, Romania. — The hindrance of heavy-ion fusion at extreme sub-barrier energies is now a well established phenomenon, which has been observed experimentally in many medium-heavy systems [1]. The low-energy data can be explained fairly accurately by coupled-channels calculations that use a shallow potential in the entrance channel. This will be illustrated by comparing to the fusion data for ^{64}Ni+^{64}Ni and ^{16}O+^{208}Pb (see [2,3].) Good agreement with the low-energy data can only be achieved by determining the fusion from ingoing wave boundary conditions that are imposed at the minimum of the pocket. The shallow potential we use is generated by correcting the M3Y double-folding potential for the effect of the nuclear incompressibility, which we simulate by a repulsive, effective NN interaction. The shallow potential also helps explaining the suppression of fusion data that has been observed at energies far above the Coulomb barrier. [1] C. L. Jiang et al., Phys. Rev. C 73, 014613 (2006). [2] Ş. Mişicu and H. Esbensen, Phys. Rev. Lett. 96, 112701 (2006). [3] H. Esbensen and Ş. Mişicu, Phys. Rev. C 76, 054609 (2007).

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