Abstract Submitted
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Recent progress in the study of heavy-ion fusion hindrance at extreme sub-barrier energies.[1] C.L. JIANG, B.B. BACK, C.N. DAVIDS, H. ESBENSEN, R.V.F. JANSSENS, J.P. GREENE, H.Y. LEE, C.L. LISTER, M. NOTANI, R.C. PARDO, N. PATEL, K.E. REHM, D. SEWERYNIAK, B. SHUMARD, X. WANG, S. ZHU, Argonne National Laboratory, P. COLLON, X.D. TANG, University of Notre Dame — A new phenomenon, heavy-ion fusion hindrance at extreme sub-barrier energies, has been discovered at ANL several years ago [1]. It was first observed in medium-mass systems, but later measurements and analyses showed that this might be a general behavior of heavy-ion fusion at extreme sub-barrier energies. As a result, it could also have an effect on fusion reactions of importance in nuclear astrophysics, such as ^{12}C + ^{12}C etc. [1]. The main difference between the systems studied earlier and astrophysically important fusion reactions is in the reaction Q-values, which are positive for lighter nuclei and negative for medium-mass systems. We have, therefore, recently studied fusion in the system ^{28}Si + ^{30}Si with a Q-value of 14.3 MeV, which is comparable to that of ^{12}C + ^{12}C (Q=13.9 MeV). Results from this experiment as well as from other studies will be discussed. [1] C.L. Jiang *et al.*, Phys. Rev. Lett. 87, 052701 (2002); Phys. Rev. C73, 014603 (2006) ; Phys. Rev. C75, 015803 (2007).

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