

The Effects of Neutron Transfer on Nuclear Fusion at Low Energies

Nuclear fusion produces heavier nuclei in stars and in laboratories. At energies so low that a classical particle could not penetrate the Coulomb repulsion of the nucleus, the Coulomb barrier, fusion takes place by quantum tunneling. At these energies, fusion rates can be sensitive to the interplay between nuclear structure and nuclear reactions. This talk presents experimental studies of the influence of neutron transfer on sub-barrier fusion. Fusion cross sections as a function of reaction energy measured with neutron-rich radioactive beams will be compared with those measured with stable beams. Future measurements related to low energy fusion processes in the crust of neutron stars will be discussed.