Abstract Submitted
for the APR13 Meeting of
The American Physical Society

Low-energy fusion caused by an interference BORIS IVLEV, University of San Luis Potosi — Fusion of two deuterons of room temperature energy is discussed. The nuclei are in vacuum with no connection to any external source(electric or magnetic field, illumination, surrounding matter, traps, etc.) which may accelerate them. The energy of two nuclei is conserved and remains small during the motion through the Coulomb barrier. The penetration through this barrier, which is the main obstacle for low-energy fusion, strongly depends on a form of the incident flux on the Coulomb center at large distances from it. In contrast to the usual scattering, the incident wave is not a single plane wave but the certain superposition of plane waves of the same energy and various directions, for example, a conergent conical wave. The wave function close to the Coulomb center is determined by cusp caustic which is probed by de Broglie waves. The particle flux gets away from the cusp and moves to the Coulomb center providing a not small probability of fusion (cusp driven tunneling). Getting away from a caustic cusp also occurs in optics and acoustics. arXiv:1211.1243

Boris Ivlev
University of San Luis Potosi

Date submitted: 19 Nov 2012 Electronic form version 1.4