Higher Order Effects in the Coulomb Dissociation of ^{8}B into ^{7}B $+ p$

S. Typel, H. H. Wolter, and G. Baur [a]

[a] Institut für Kernphysik, Forschungszentrum Jülich, D-52425 Jülich, Germany

Corrections to the first order semiclassical description of the electromagnetic breakup of ^{8}B in heavy ion collisions are studied. Second and third order corrections to the Coulomb dissociation of light projectiles in heavy ion collisions are calculated in an approximation for small adiabaticity parameters. Quantum mechanical diffraction effects are investigated in a simple approximation obtained from Glauber theory. The methods are applied to the ^{8}B breakup at projectile energies of 46.5 and 250 A·MeV. Implications on the extraction of the astrophysical S-factor of the inverse ^{7}Be$(p,\gamma)^8$B reaction, which is relevant to the solar neutrino problem, are discussed.

published in Nucl.Phys. **A613** (1997) 147

Statistical Fluctuations for the Fission Process on its Decent from Saddle to Scission

H. Hofmann and D. Kiderlen

We reconsider the importance of statistical fluctuations for fission dynamics beyond the saddle in the light of recent evaluations of transport coefficients for average motion. The size of these fluctuations are estimated by means of the Kramers-Ingold solution for the inverted oscillator, which allows for an inclusion of quantum effects.

published in Phys. Rev. **C56** (1997) 1025