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## LBNL Nuclear Physics Forum

Thursday, July 20, 2017 @ 11:00 am

Building 88 Lounge (2nd floor)

*Cookies and coffee available from 10:15am*

Prof. Hafez A. Radi

MSA University, Egypt

### ***“Semi-classical calculations for $^{156}\text{Gd}$ (p,d) reaction”***

Numerical semi-classical calculations are carried out to study the angular distribution of deuterons from the p,d pickup reaction of 25 MeV protons incident on the nucleus  $^{156}\text{Gd}$  and also its proton elastic scattering. Due to the rapid fall of the real optical potential in the vicinity of the target nucleus, the classical trajectories are very sensitive to the proton impact parameters. In addition, a simple three-body quantum approach is developed to calculate the probability of a neutron transfer by a surviving proton at the closest approach. Within estimated uncertainties, the resulting theoretical angular distribution achieves a comparable fit with experimental results for  $L=0$  compared to other theoretical models.



Nuclear Science Division