Type: not specified

## On quantum entanglement and Neutron scattering

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The ongoing enhanced interest in quantum entanglement, which can be actually regarded as photon scattering, is compared with the inclusion of internal level structures (resonances) of the nucleus and its impact on the scattering process and in particular on the angular distribution. The work covers the different approaches of the elastic and inelastic scattering in view of the fundamental outcome of the Schrödinger equation and the way it is incorporated in lower S resonances for the elastic scattering and on the other hand for high energy with p or d levels and the consequent inelastic scattering within the unresolved range. Based on the measurement done in RPI during 2007-2009 for elastic scattering in the resolved resonance range different assumptions (at least as neutron are concerned) are made concerning the completeness and locality of quantum mechanics theory as argued by quantum physicists. As a conclusion a more "classical physical" oriented approach is suggested for scattering at higher energies, albeit without solid experimental proof for the presented isotopes. The design of such experiments should combine discrete angular distributions and temperature dependencies with which the existing theories could be considerably improved.

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Track Classification: Recent Experimental Results of Elastic and Inelastic Neutron Scattering