Abstract Submitted
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Large Longitudinal Spin Alignment Generated in Inelastic Nuclear Reactions[1] DANIEL HOFF, Washington University in St. Louis — E/A=24 MeV ^{7}Li projectiles, inelastically excited by collisions with Be, C, and Al targets, are found to have large longitudinal spin alignment when the targets remain in their ground state. The observed alignment is consistent with an alignment mechanism stemming from an angular-momentum-excitation-energy mismatch. The longitudinal spin alignment of ^{7}Li* [4.63 MeV] is well described by a DWBA cluster-model $(\alpha + t)$. The longitudinal spin alignment of several other systems is also well described by DWBA calculations, including one where a cluster model is inappropriate, demonstrating the proposed alignment mechanism is a general phenomenon. Predictions of spin alignment have been made for the inelastic excitation of ^{12}C at both low and high beam energies where the mismatching condition is inactive and active, respectively.

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