Abstract Submitted
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Coulomb distorted nuclear matrix elements in momentum space: I. Formal aspects[1] N.J. UPADHYAY, NSCL, Michigan State University, MI, V. EREMENKO, INPP, Ohio University, OH; SINP, Lomonosov Moscow State Univ. Moscow, Russia, F.M. NUNES, NSCL, Michigan State University, MI, CH. ELSTER, INPP, Ohio University, OH, TORUS COLLABORATION[2] — (d,p) reactions are an important tool to reveal nuclear structure. In order to treat elastic scattering, transfer and breakup reactions on the same footing,it is advantageous to view the a (d,p) reaction as three-body problem p+n+A within a Faddeev framework. A screening and renormalization technique for including the Coulomb interaction has been used in pioneering a Faddeev approach in (d,p) reactions for light nuclei [1]. It turns out that this procedure is not suited for reaction with heavy nuclei, since it becomes numerically unstable [2]. Therefore a new approach has been suggested by Mukhamedzhanov [3] by formulating the Faddeev equations in a Coulomb basis instead of plane wave basis. In order to test the feasibility of this approach we calculate as first step Coulomb distorted nuclear matrix elements for a variety of nuclei (including 208Pb) for partial waves from l=0 to l=20. Insights and techniques for this will be presented.

[1] A. Deltuva, A. C. Fonseca, and P. U. Sauer, Phys. Rev. C71, 054005 (2005).
[2] F.M. Nunes and A. Deltuva, Phys. Rev. C84, 034607 (2011).
[3] A. M. Mukhamedzhanov et al., Phys. Rev. C86, 034001 (2012).

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[2]http://www.reactiontheory.org/

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