Effective R-matrix parameters of the Woods-Saxon nuclear potential DYLAN ABRAHAMSEN, ALEXANDER VOLYA, INGO WIEDENHÖVER, Florida State University — The phenomenological R-matrix approach is one of the most practical tools for the analysis of the multi-channel resonant scattering data. However, the relatively unconstrained phenomenological parameters of the R-matrix approach have been subjects of a continuous criticism. goal of this research is to study the connection between the R-matrix channel radius and the reduced width and the parameters of the actual potential model. We evaluate the scattering observables of the Woods-Saxon potential [1] and do an R-matrix fit which allows for the reduced width and channel radius to be determined. The dependence of the R-matrix parameters on the diffuseness, spin-orbit interaction and on other parameters of the nuclear potential is discussed. Work is supported by the US Department of Energy under Grant No. DE-FG02-92ER40750 and by the NSF.

[1] http://arxiv.org/abs/0706.1628

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