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## R-matrix analysis of nuclear-reaction cross-section data

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Any theoretical method for the description of nuclear reactions cannot fully describe the nuclear effects inside the nucleus because of the complexity of the nucleus and nuclear forces acting within the nucleus. R-matrix theory does not attempt to describe these forces inside nuclei, but rather uses quantities of internal properties of nuclei as parameters that can be determined from experiment. In this work, we will analyse Helium-3 induced nuclear-reaction data from the Ion Beam Laboratory of IST at CTN, and from IBANDL data library using R-matrix theory. The analysis will be made with the help of the AZURE2 computer code. The objective is to provide a fit and theoretical interpretation of the experimental cross-section data and also to use these data to make new theoretical predictions.

**Primary author:** COSTA, Gonalo (Instituto superior tecnico)

**Presenter:** COSTA, Gonalo (Instituto superior tecnico)