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The Gogny nuclear database for Nuclear Reactions

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Nuclear reaction models, implemented in nuclear reactions codes, require the knowledge of several inputs such as masses, nuclear levels and level densities, optical models, photon strength functions, and sometimes fission paths. For decades, analytical expressions have been used in nuclear reaction codes, due to the freedom they offer to the user to modify their associated parameters in order to fit cross sections. The development of computational resources has opened a new era, roughly 20 years ago, by allowing the systematic calculation of these ingredients from microscopic approaches and their use through tables stored in databases. During this period, several approaches have been developed to improve step by step the physical content of these models. We will review these efforts, focussing in particular on those performed using the Gogny force as basic input, and will show where we are now and what we foresee as future improvements.

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