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**TALYS : a tool to go from theoretical modeling
of nuclear reactions to evaluations.**

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The TALYS code development started in 1998 in order to exploit the new computers which were appearing at that time and to have a tool which would be easier to improve than the other available codes. Since then, it has incorporated many new models that have appeared and has been made compatible with other codes in order to establish a link between nuclear reaction modelling and nuclear data evaluations.

A nuclear reaction calculation involves several models linked together, whose quality and validity are more or less well established. The oldest models, used since the beginning of nuclear reaction studies are the optical model and the compound nucleus model. These models correspond to two extreme situations in terms of the time required for a nuclear reaction to take place. The optical model corresponds to the fastest interaction process between a projectile and a target, while the compound nucleus process is the longest one, corresponding to the situation where the projectile has been absorbed in the target and has shared its energy with the target constituents. Between these two extreme cases, stands the pre-equilibrium process whose role becomes significant only beyond an energy threshold.

The practical implementation of these models requires other ingredients, which are either provided by complementary models such as those for level densities or for fission processes or directly taken from experimental databases such as discrete level properties or nuclear masses, eventually completed by theoretical predictions when necessary.

We will review all these models implemented in the TALYS code and will illustrate, with several examples, the large possibilities offered by this code, either to perform in depth nuclear reaction analysis or to produce large nuclear reactions' databases.