

NACRE Update and Extension Project

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Nuclear reactions are continuously occurring in the Universe and are changing its nuclidic composition. The knowledge of nuclear reaction rates allows to investigate these changes which result from various sequences of stellar events that have occurred since the Big Bang. It is thus essential to provide astrophysicists with nuclear reaction rates based on carefully compiled and evaluated nuclear data in order to build as reliable nucleosynthesis and stellar evolution models as possible.

In 1988, Caughlan & Fowler [1] have published a compilation of reaction rates for astrophysical purposes. Recently, Angulo *et al.* (1999; referred to as NACRE) [2] and Iliadis *et al.* (2001) [3] updated a large number of reaction rates on targets with atomic number in the range $1 \leq Z \leq 14$ and $10 \leq Z \leq 20$. Additionally, Descouvemont *et al.* (2004) [4] evaluated reaction rates relevant to the Big Bang using the R-Matrix method.

At this point, we consider that time is ripe for an update of already compiled rates using newly available experimental data, but also to include new rates in a revised version of NACRE. Since 2004, this update and extension project has been pursued within a KONAN-ULB collaboration. The necessity for an revision of the NACRE rates is illustrated by the many new data concerning ${}^7\text{Be}(p,\gamma){}^8\text{B}$ [5, and references therein] (see Figure 1). We report on the current status of the project.

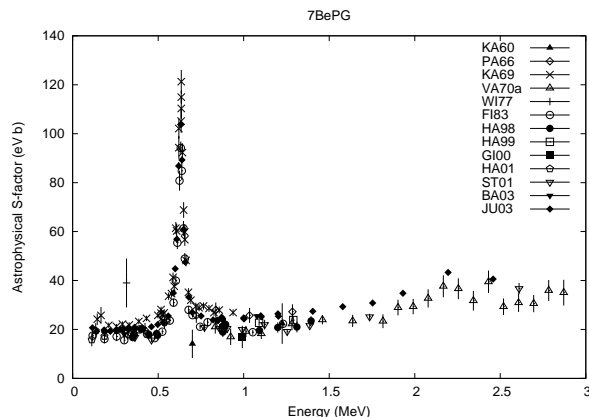


Figure 1: *Astrophysical S-factor of the ${}^7\text{Be}(p,\gamma){}^8\text{B}$ reaction*

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