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Solar fusion cross sections III - a nuclear physics perspective

The third decadal review of solar fusion cross sections (SF-III) is based on a community consensus formed in a workshop in July 2022 in Berkeley with 50 participants representing many of the groups active in the field. It is now available online (<https://arxiv.org/abs/2405.06470> , and Rev. Mod. Phys. in press).

I will present a nuclear physics based perspective on the SF-III recommended astrophysical S-factors for the main hydrogen burning reactions. Further, I will discuss the recommendations for future work included in the SF-III paper, and reflect on possible updates based on more recent developments.

In particular, it emerges from SF-III that while the ${}^7\text{Be}$, ${}^8\text{B}$, and CNO neutrino fluxes are by now well measured (<2% precision for ${}^7\text{Be}$ and ${}^8\text{B}$) assuming flavour mixing, the model predictions for these fluxes are much less precise (8-17% error bar). I will discuss what is needed to close this gap.

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