

Solar tests for new opacities

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Experimental results on radiative opacities (Bailey et al. 2015) suggest that commonly used radiative opacity calculations underestimate the true opacity at conditions similar to the base of the solar convective envelope. This hints at a solution to the solar abundance problem. New calculations of radiative opacities have become available: the new OPLIB opacities (Colgan et al. 2016) for stellar interiors, and OPAS (Mundet et al. 2015) for solar models. We use these new opacities to compute standard solar models and test them against helioseismic and solar neutrino data. While OPAS leads to solar models with low-Z that are globally in reasonable agreement with the data, OPLIB creates serious discrepancies between models and data, especially for the helium abundance and the 8B and 7Be neutrino fluxes. We stress that stellar models and isochrones based on OPLIB opacities should be fully tested if they are to be adopted as a next standard for radiative opacities in stellar models.

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