ELECTRON CAPTURE PROCESSES IN INTERMEDIATE MASS STARS

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Intruder mass stars develop a degenerate core constituted of O, Ne and Mg during their evolution. As the density in the core increases electron capture sets in and finally ignites Ne and O burning. Particularly important is electron capture on ^{20}Ne that has been found recently to be dominated by a second forbidden transition from the 0+ ground state of ^{20}Ne to the 2+ ground state of ^{20}F [1]. We have performed shell-model calculations to determine the transition strength and provide an updated value of the electron capture rate.

[1] G. Martinez-Pinedo et al., arXiv:1402.0793 [astro-ph.HE] (2014).