The consequences of nuclear electron capture in core collapse supernovae

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abstract The most important weak nuclear interaction to the dynamics of stellar core collapse is electron capture, primarily on nuclei with masses larger than 60. In prior simulations of core collapse, electron capture on these nuclei has been treated in a highly parameterized fashion, if not ignored. With realistic treatment of electron capture on heavy nuclei come significant changes in the hydrodynamics of core collapse and bounce. We discuss these as well as the ramifications for the post-bounce evolution in core collapse supernovae.