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EOS table with hyperons and emergence of hyperons in core-collapse processes AKIRA OHNISHI, Yukawa Institute for Theoretical Physics, Kyoto University, C. ISHIZUKA, Keele U., K. TSUBAKIHARA, Hokkaido U., K. SUMIYOSHI, Numazu CT, S. YAMADA, Waseda U., H. SUZUKI, Tokyo U. of Science — We discuss the roles of hyperons in dense matter formed during core-collapse supernovae. We have recently presented several nuclear matter EOS tables including hyperons using an $\mathrm{SU_f}(3)$ extended RMF model [1]. Σ and Ξ potential in nuclear matter are chosen to be $U_\Sigma(\rho_0) \simeq +30$ MeV and $U_\Xi(\rho_0) = -15$ MeV, based on recent hypernuclear physics information. Hyperons do not play important roles in the collapse and bounce stages, but they are found to populate at 0.5-0.7 s after the core bounce and to trigger the re-collapse to a black hole in failed supernovae [2]. Hyperons start to show up off center owing to high temperatures caused by the shock-accretion interaction, and later prevail at center when the central density becomes high enough. The neutrino emission stops much earlier with the hyperonic EOS, while the average energies and luminosities are not affected much. In the presentation, we discuss the EOS with hyperons at high temperatures, and its dependence on hyperon potentials.
[1] C. Ishizuka, A. Ohnishi, K. Tsubakihara, K. Sumiyoshi, S. Yamada, J. Phys. G **35** (2008), 085201.
[2] K. Sumiyoshi, C. Ishizuka, A. Ohnishi, S. Yamada and H. Suzuki, Astrophys. J. **690** (2009), L43.

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