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Collective Neutrino Oscillations[1] SHASHANK SHALGAR, HUAIYU DUAN, Univ of New Mexico — The large neutrino flux emitted during core-collapse supernovae leads to neutrino self-interaction. The presence of neutrino self-interaction is the cause for interesting non-linear evolution of neutrino flavor. This offers a unique probe for neutrino properties. However, due to the non-linear nature, there are challenges in the computation of flavor evolution even in the simplest case. We discuss the physics impact of supernova neutrinos, the challenges involved, and potential improvements in methods for computation of neutrino flavor evolution in core-collapse supernovae.

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