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Roles of shock instability interacting with neutrino radiation on supernova explosions NAOFUMI OHNISHI, Center for Research Strategy and Support, Tohoku University, WAKANA IWAKAMI, KENICHI SUGAI, Department of Aerospace Engineering, Tohoku University, KEI KOTAKE, Division of Theoretical Astronomy, National Astronomical Observatory Japan, SHOICHI YAMADA, Science and Engineering, Waseda University — Standing accretion shock instability (SASI) is expected to be a feasible candidate to trigger a core-collapse supernova explosion which has not well understood yet. We have studied this phenomenon with including neutrino heating and realistic EOS and found that SASI may enhance neutrino heating. However, the successful explosion still seems to be difficult without additional excitation process of the shock instability which may be sustained by acoustic-vortex cycle in the supernova cores. We have performed the simulations with g -mode of proto-neutron star that may enhance the SASI growth. Moreover, a new numerical method of neutrino transport for more sophisticated simulations is presented. We discuss also a possible laboratory experiment of SASI.

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