Nucleosynthesis from Black Hole Accretion Disks and the Influence of Neutrino Flavor Transformation

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We consider the nucleosynthesis from disks which form in compact object mergers and in rotating stellar collapse (collapsars). We find that the neutrinos from these disks have special properties, i.e. antineutrinos can outnumber neutrinos, which creates a novel type of resonance transition very close to the disk. This transition does not exist in supernovae or other astrophysical environments. We explain the physics of this resonance and its consequences for nucleosynthesis. The consequences are particularly strong because the resonance transition occurs close to the emission point of the disk, when the neutrons and protons are still present in the wind ejecta. One particular consequence is that it enables an r-process in stellar collapse disks.