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Neutrinos produced via espresso and stochastic acceleration in AGN jets ROSTOM MBAREK, DAMIANO CAPRIOLI, University of Chicago, KOHTA MURASE, The Pennsylvania State University — We propagate particles in a 3D magnetohydrodynamical simulation of a relativistic jet to investigate the espresso mechanism, a one-shot reacceleration of lower-energy cosmic rays that may lead to the production of ultra-high-energy cosmic rays (UHECRs) in active galactic nuclei. We find spectra, chemical composition, and anisotropy consistent with UHECR phenomenology. In this work, we also include UHECR diffusion, photodisintegration, and neutrino production. Initially, we include sub-grid scattering to account for small scale magnetic fluctuations to test for the relative importance of espresso and stochastic acceleration. Then, we study high-energy neutrino production, taking into account the effects of external photon fields, and incorporate the effects of photodisintegration and the production of secondary particles. We find that the scattering rate increases the acceleration efficiency of lower-energy particles up to a factor of $\sim 10^4$ and flattens the spectrum of escaping particles. However, the highest-energy particles are still espresso-accelerated even for Bohm diffusion. The neutrino spectrum we obtain is compared with IceCube's observed flux.

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