Elementary processes in the Self-Interacting Flavor-Mixed Dark Matter A. FORD, M.V. MEDVEDEV, University of Kansas — Some Cold Dark Matter candidates are flavor-mixed particles. Recently, it has been shown that a collision (scattering) of two non-relativistic flavor-mixed particles, as in a self-interacting dark matter model, can cause both particles to experience mass eigenstate conversions, which in turn can ultimately lead to their escape from a trapping gravitational potential of a dark matter halo. Such a process has an important effect on large scale structure formation and seems to provide an elegant solution to several outstanding cosmological problems. In the early universe, however, the mass eigenstate conversions are suppressed because of rapid broadening of the particles' wave-packets. Here we study elementary processes involving flavor-mixed particles – elastic scatterings and conversions – and calculate cross-sections of these processes under various conditions. Our results are of great importance for accurate numerical modeling of the cosmological structure formations with N-body parallel codes.

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