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Boosted Dark Matter

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We show that the high energy events observed in the IceCube detector - usually interpreted as evidence for an astrophysical neutrino flux - could also be a signal of highly boosted dark matter particles scattering on nucleons. This scenario is for instance realized in models featuring a superheavy DM particle which decays into a much lighter dark sector species. We show that, besides explaining the total rate, energy spectrum and track vs. shower ratio of the IceCube events, such a scenario could also easily accommodate the Fermi gamma ray excess if the light dark sector species has a non-negligible relic abundance and annihilates into Standard Model particles.

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