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Study of IceCube high energy neutrinos excess using unstable dark matter

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Recently the IceCube collaboration team reported an excess of 28 high energy neutrinos, which is well above the predicted number of the background events. A possible link between this neutrino signal and unstable dark matter has been suggested, namely, decay products of unstable weakly interacting massive particles making up the dark matter halo of our Milky Way galaxy may be responsible for this neutrino emission. In this work we set constraints on the lifetime of decaying dark matter candidates for a range of masses in order to our predictions to be consistent with IceCube data. Particularly, we focus in studying the excess of neutrinos due to decays of Dark Matter occurring at the galactic center of the Milky Way. In addition, we carried out numerical simulations by using publicly available CLUMPY code in order to generate the neutrino signal due to DM decays and to extract out the background coming from further galactic and extragalactic sources.

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