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A Search for Monoenergetic Neutrinos from Dark Matter Decay

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In 2013, the IceCube experiment brought to light the existence of a flux of very high energy neutrinos. The origin of those neutrinos was shown to be extraterrestrial, as they do not fit atmospheric backgrounds at high energy. Still, where those neutrinos are exactly sourced from remains to this day an open question. In the context of dark matter searches, the discovery of a neutrino line would provide a smoking gun for the existence of the dark matter particle. We propose to review a search for this spectral feature using IceCube data. No significant hint was found in the analysed dataset. Yet, a very strong improvement of the limits was attained, which makes it worth discussing how these limits now compare to the ones obtained with gamma lines, the other possible smoking gun for dark matter.

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