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Galactic diffuse neutrino component in the astrophysical excess measured by the IceCube experiment

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The Galaxy is a guaranteed source of neutrinos produced by the interaction of cosmic rays (CR) with the interstellar gas. According to conventional CR propagation models, however, this emission may be too weak to be detected even by Km^3 scale neutrino telescopes.

This belief has been questioned by recent Fermi-LAT results which showed that the CR spectrum in the inner Galactic plane is significantly harder than that inferred from local CR measurements. I will show that a phenomenological model adopting a spatial dependent CR diffusion coefficient, which accounts for that feature and reproduces the gamma-ray excess found by Milagro at 15 TeV, predicts a significantly larger Galactic neutrino emission. I will compare the prediction of this models with ANTARES and IceCube results and discuss the perspectives of KM3NeT.

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