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Neutrinos from Galactic Microquasars

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Motivated by recent IceCube observations we re-examine the idea that microquasars are high energy neutrino emitters. By stretching to the maximum the parameters of the Fermi engine we show that the nearby high-mass X-ray binary LS 5039 could accelerate protons up to above about 20 PeV. These highly relativistic protons could subsequently interact with the plasma producing neutrinos up to the maximum observed energies. After that we adopt the spatial density distribution of high-mass X-ray binaries obtained from the deep INTEGRAL Galactic plane survey and we assume LS 5039 typifies the microquasar population to demonstrate that these powerful compact sources could provide a dominant contribution to the diffuse neutrino flux recently observed by IceCube.

Primary author: Mr DA SILVA, Luiz (University of Wisconsin - Milwaukee)

Presenter: Mr DA SILVA, Luiz (University of Wisconsin - Milwaukee)

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