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Galactic sources of high energy neutrinos

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The recent results from ground based gamma-ray detectors (HESS, MAGIC, VERITAS) provides a population of TeV galactic gamma-ray sources which are potential sources of high energy neutrinos. Since the gamma-rays and neutrinos are produced from decays of neutral and charged pions, the flux of TeV gamma-rays can be used to estimate the upper limit of neutrino flux and vice versa; detectability of neutrino flux implies a minimum flux of the accompanying gamma-rays (assuming internal and external absorption of gamma-rays is negligible). Using this minimum flux it is possible to find the sources which can be detected with cubic-kilometer telescopes. I will discuss possibility to detect high energy neutrinos from powerful galactic accelerators, such as Supernova Remnants (SNRs) and Pulsar Wind Nebulae (PWNe) and show that likely only two sources (RX J1713.7-3946 and RX J0852.0-4622) will be detected by current generation of instruments (IceCube and Km3Net). It will be shown also that galactic binary systems could be promising sources of high energy neutrinos. In particular, neutrinos and gamma-rays from Cygnus X-3 during recent gamma-ray activity will be discussed, showing that in the future such kind of activities could produce detectable flux of neutrinos.

Primary author: Dr SAHAKYAN, Narek (National Academy of Sciences of the Republic of Armenia and ICRANet)

Presenter: Dr SAHAKYAN, Narek (National Academy of Sciences of the Republic of Armenia and ICRANet)

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