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Search for candidate neutrino emitters with similar features as TXS 0506+056

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The detection of high energy astrophysical neutrinos is an important step towards finding the long-sought sources of cosmic rays. However, the long-exposure neutrino sky map by IceCube has not shown significant excesses so far and the sources of such energetic neutrinos remain unknown. Among the potential extragalactic neutrino sources, blazars are interesting candidates, as suggested by the detection of the flaring blazar TXS 0506+056 in coincidence with a high-energy neutrino, IceCube-170922A, in 2017. This is the first –and up to now the only –evidence for a neutrino point source. In this contribution, we present a sample of candidate neutrino-emitting blazars taken from the most recent 4LAC-DR2 catalog (based on 10 years of Fermi-LAT data) and selected by constraining a number of key properties to be similar as those of TXS 0506+056. Important properties of the broad line region, narrow line region and disk of the candidates will be discussed, with particular attention to the (in)efficiency of the accretion flow. In addition, theoretical interpretation of the spectral energy distribution of the candidates through lepto-hadronic models will be shown, providing information on the neutrino flux from these sources and the detectability prospects at TeV energies.

Collaboration

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