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High energy neutrino production in the core region of radio galaxies due to particle acceleration by magnetic reconnection

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Detection of astrophysical high energy (HE) neutrinos in the range of TeV- PeV energies by IceCube observatory has opened new era in high energy astrophysics. Neutrinos with energies \sim PeV imply that they are originated from a source where cosmic rays (CRs) can be accelerated up to $\sim 10^{17}$ eV. Recently it has been shown that the observed TeV gamma-rays from radio galaxies may have a hadronic origin and in such a case this may lead to neutrino production. In this work we show that HE protons accelerated by magnetic reconnection in the core region of radio galaxies may produce HE neutrinos via decays of charged pions produced by photo-meson process. We have also calculated the diffuse intensity function for the HE neutrinos which can explain the detected IceCube data.

Collaboration

– not specified –

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