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Neutrino production in blazar radio cores

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Models of the origin of astrophysical neutrinos with energies from TeVs to PeVs are strongly constrained by multimessenger observations and population studies. Recent results point to statis- tically significant associations between these neutrinos and active galactic nuclei (AGN) selected by their radio flux observed with very-long-baseline interferometry (VLBI). This suggests that the neutrinos are produced in central parsecs of blazars, AGN with relativistic jets pointing to the observer. However, conventional AGN models tend to explain only the highest-energy part of the neutrino flux observationally associated with blazars. Here we discuss in detail how the neutrinos can be produced in the part of an AGN giving the dominant contribution to the VLBI radio flux, the radio core located close to the jet base. Physical conditions there differ both from the immediate environment of the central black hole and from the plasma blobs moving along the jet. Required neutrino fluxes, considerably smaller than those of photons, can be produced in interactions of relativistic protons, accelerated closer to the black hole, with radiation in the core

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