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Neutrino-Emitting Seyfert candidates in the VHE gamma-ray sky

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The Seyfert galaxies NGC 1068 and NGC 4151 have emerged as the most promising counterparts of 4.2σ and 3.0σ neutrino excesses detected by IceCube in the TeV energy range.
Gamma rays and neutrinos are co-produced at the same flux level via hadronic interactions between the parent proton population and the ambient matter and radiation in the neutrino-emitting region.Observations of NGC 1068 with the MAGIC telescopes have set stringent upper limits on its very-high-energy (VHE, E>100 GeV) gamma-ray flux, revealing the presence of a gamma-ray obscured accelerator.
With the latest MAGIC observations, similar evidence is found in NGC 4151. In this talk, I will present the first results from MAGIC observations of NGC 4151, which led to the estimation of stringent upper limits on its VHE emission. These upper limits are used to constrain the neutrino-emitting region to the vicinity of the SMBH, to about ~10^3 Schwarzschild radii of the SMBH at the center of NGC 4151, using relatively model-independent opacity arguments derived from multi-wavelength observations.
These findings strongly suggest that, like NGC 1068, NGC 4151 harbors a neutrino production site that is optically thick to gamma rays, reinforcing the idea that Seyfert galaxies could be a new class of hidden cosmic-ray accelerators.

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