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Gamma-ray properties of low luminosity AGNs

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We present results of the analysis of the Fermi-LAT data from low-luminosity Seyfert galaxies, whose X-ray spectra are consistent with predictions of the hot flow (ADAF) model. We use our precise hot flow model (fully GR and with a Monte Carlo computation of radiative processes) to fit the X-ray data and then we estimate the gamma-ray flux from hadronic processes in the two-temperature plasma forming the flow. We find that the strongest gamma-ray signal may be expected from NGC 4258 and NGC 4151 and at the positions of both objects we find marginally significant signals, with sigma ˜ 3. For all studied objects we derive upper limits (UL) for the gamma-ray flux. By comparing them with predictions of the ADAF model we find that the Fermi-LAT ULs strongly constrain non-thermal acceleration processes in hot flows (with the energy content in the non-thermal component of proton distribution amounting to at most ˜10%) as well as the values of some crucial parameters, most significantly the magnetic field strength. We also find that the component above 4 GeV in the gamma-ray spectrum of Cen A may be due to hadronic emission from a hot accretion flow with parameters consistent with the above constraints. Under the assumption that this emission is produced by protons accelerated up to ˜10ˆ16 eV, as predicted by some acceleration models, we calculate the expected neutrino flux.

Collaboration

– not specified –

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Primary authors: Mr NIEDZWIECKI, Andrzej (Department of Astrophysics, University of Lodz); Mr XIE, Fu-Guo (Key Laboratory for Research in Galaxies and Cosmology, Shanghai Astronomical Observatory, Chinese Academy of Sciences); Mr WOJACZYNSKI, Rafal (Department of Astrophysics, University of Lodz)

Presenter: Mr WOJACZYNSKI, Rafal (Department of Astrophysics, University of Lodz)

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