

Gamma Rays from Fast Black-Hole Winds

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Massive black holes at the centers of galaxies can launch powerful wide-angle winds, which if sustained over time, can unbind the gas from the stellar bulges of galaxies. These winds, also known as ultra-fast outflows (UFOs), may be responsible for the observed scaling relation between the masses of the central black holes and the velocity dispersions of stars in galactic bulges. Propagating through the galaxy, the wind should interact with the interstellar medium creating a strong shock, similar to those observed in supernovae explosions, which is able to accelerate charged particles to high energies. In this talk I will present the Fermi Large Area Telescope detection of gamma-ray emission from these shocks in a small sample of galaxies exhibiting energetic winds. The detection implies that energetic black-hole winds transfer ~0.04% of their mechanical power to gamma rays and that the gamma-ray emission represents the onset of the wind-host interaction.

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Collaboration

Fermi-LAT

other Collaboration

Subcategory

Experimental Results

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