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Particle Acceleration and Gamma-Rays from AGN Jets

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The recent launch of the Fermi gamma-ray observatory and the arrival of powerful ground-based gamma-ray telescopes such as VERITAS and HESS have provided a quantum leap in our ability to study the gamma-ray sky. I will review recent results on gamma-ray emission detected from Active Galactic Nuclei (AGN), in particular from the so-called blazar AGN that have powerful, relativistic outflows (“jets”) directed towards us. The focus will be on understanding the origin of this extreme emission, which can extend to energies greater than 10 TeV and can vary significantly on timescales as short as minutes, to see what it tells us about the physical conditions present in the outflow and the physical processes at work.