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Abstract for an Invited Paper  
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### **AGN and the Origin of the Isotropic Gamma-ray Background**

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The data collected by the Fermi Large Area Telescope (LAT) for more than four years enable a huge step forward in measuring and understanding the origins of the isotropic gamma-ray background (IGRB). The IGRB originates from the superposition of different populations of unresolved sources with possible contributions from genuinely diffuse and exotic processes. In the first part of the talk the latest measurement of the IGRB will be presented. Next, we will discuss the contribution of AGN to the IGRB focusing in particular on the role of BL Lacertae (BL Lac) objects. These objects, whose number is dramatically increasing in the Fermi samples, might provide, thanks to their hard spectra, a substantial contribution to the IGRB at high energy (i.e. above 10 GeV). This energy range is particularly interesting because both the extragalactic background light and the intergalactic magnetic field might play an important role. Finally we will also present a refined measurement of the contribution of radio galaxies and discuss the origin of any unexplained component of the IGRB.