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Dissecting the high-latitude gamma-ray sky with photon-count statistics

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In the recent past, statistical image analysis techniques have been proven to provide unprecedented sensitivity for decomposing gamma-ray sky maps. In this talk, I will use statistical properties (the 1-point PDF) of the Fermi-LAT photon counts map to measure the composition of the gamma-ray sky at high latitudes. I will introduce a new method, generalizing the use of standard pixel-count statistics, and summarize first results on the decomposition of the observed gamma-ray emission into (a) point-source contributions, (b) the Galactic foreground contribution, and (c) a truly diffuse isotropic background contribution. Our new measurements improve beyond catalog detection limits by about one order of magnitude. The talk will conclude with an overview of implications and future prospects.

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