THE APPARENT ISOTROPY OF ULTRA-HIGH ENERGY COSMIC RAYS

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From the analysis of AGASA data above 4×10^{19} eV, we show that the ultra-high energy cosmic rays flux is neither purely isotropic, nor reflects the expected anisotropy from a pure source distribution that maps large scale structure in the local universe. The arrival distribution seems to be the result of a mixture of fluxes (e.g., dark matter halo plus large scale structure) or the superposition of a direct and a diffuse radiation field components respectively. Another viable option is an arbitrary extragalactic flux reprocessed by a magnetized galactic wind model as recently proposed in the literature.