

Abstract Submitted
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An Alternate view of the Formation of Most Cosmic Rays¹ STIRLING COLGATE, HUI LI, Los Alamos Nat. Lab., KEN FOWLER, self — The likely total energy of extra galactic cosmic rays, per galaxy spacing volume, is a few% of the Super Massive Black Hole, (SMBH), energy of each galaxy. This assumes that all cosmic rays are accelerated in a universal power-law spectrum, $dE/E = -\Gamma(dN/N)$, $\Gamma \sim -2.6$. The energy of these extra galactic CRs is then 10^5 greater than the CR energy within the galaxy. We believe that magnetized jets, radio lobes, and extra galactic CRs are a natural result of the formation of SMBHs. A major fraction of the free energy of accretion is explained as magnetized AGN (jets, radio lobes) as force free magnetic twisted helical fields. The magnetic energy of these force-free fields is transformed efficiently to particle energy by E(parallel to B) acceleration of J(parallel) current carriers. These current carriers run-away in the E(parallel to B) fields and are “starved” in number and are marginally sufficient to carry the current at c . They are lost at the SMBH event horizon and also preferentially along tangled fields. LAUR-0805268.

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