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POISE AND EVOLUTION OF THE GALAXY: STRUCTURE, FLARES AND COSMIC RAYS.

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Abstract.

Many essential paradoxes in the mechanical balance of the Galaxy are highlighted. Their outstanding relevance demands a coherent and likely explanation. We propose a **unique and synthetic interpretation**, including a cosmological theory of the origin of the observed cosmic rays, especially at the highest energies known. It involves **MATTER-ANTIMATTER ANNIHILATION** in the median plane of the Milky Way, as a source of **“DARK MATTER”**. Accordingly, we discuss the structure and balance of the Galaxy, seen as made of two parallel disks of matter versus antimatter dominance, and opposed by the repulsion of an annihilation gas, settled in the equator disk. The admitted suppression of antimatter in the Universe, just after the “Big-Bang”, is questioned. Accordingly, **ULTRA-RELATIVISTIC THERMODYNAMICS** of cosmic rays are settled. The rhythmic emissions of “Gamma-Ray Bursts” and other flares are easily explained. Many stringent tests tend to confirm this theory : pointedly, the now classical energy behaviour of the incident flux of energetic cosmic rays is easily derived as a power law, quite with expected exponents of -2.5 and -3, possibly (main dependence, including the first knee). Ultra-high energies, further, are easily attainable, with no necessary restriction of the “GZK” kind, for instance. Beyond 10^{20} eV, rather, a new break is still thus made feasible.

KEY WORDS : annihilation, antimatter, Big-Bang, cosmic rays, dark matter, disk, equator, flares, flux, Galaxy, gamma ray bursts, globular clusters, knee, origin, poise, power-law, structure, ultra-high energies.