

Quantum vacuum ferromagnetism and jets

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Quantum vacuum in large fields of the order of twice or greater than the critical Schwinger field $2B_c$ shows strong anisotropic properties: virtual photons as well as electrons and positrons tend to propagate in a parallel direction to the magnetic field. In order to overcome this anisotropic behavior, we propose an heuristic model based on fermion pairing of boson-vacuum in the form of virtual para-positronium, a chiral noninvariant electron-positron bound state leading to a ferromagnetic quantum phase transition of the vacuum for fields of order of twice the critical Schwinger field $2B_c$. Our aim is to suggest a possible quantum relativistic self-magnetized jet model.

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