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Spontaneous supersymmetry breaking induced by vacuum condensates

We propose a novel mechanism of spontaneous supersymmetry breaking which relies upon a ubiquitous feature of Quantum Field Theory, vacuum condensates. Such condensates play a crucial role in many phenomena. Examples include Unruh effect, superconductors, particle mixing, and quantum dissipative systems. We argue that in all these phenomena supersymmetry, when present, is spontaneously broken.

Evidence for our conjecture is given for the Wess–Zumino model, that can be considered as an approximation to the supersymmetric extensions of the above mentioned systems. The magnitude of the effect is estimated for a recently proposed experimental setup based on an optical lattice.

Parallel Session

Dark Matter, Astroparticle Physics

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