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Strings, integrability and beyond

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Domaines : hep-th

Titre : *Nonperturbative Casimir Effects : Structure of gauge theories vacuum in finite systems*

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Résumé : *The Casimir effect is a quantum phenomenon rooted in the fact that vacuum fluctuations of quantum fields are affected by the presence of physical objects and boundaries. As the energy spectrum of vacuum fluctuations depends on distances between (and geometries of) physical bodies, the quantum vacuum exerts a small but experimentally detectable force on neutral objects. Usually, the associated Casimir energy is calculated for free or weakly coupled quantum fields. In the present talk, recent studies of the Casimir effect in non-perturbative regimes are reviewed : chiral and deconfining transitions in finite geometries, the influence of phase transitions on the Casimir energy and characterise the role of topological defects on Casimir phenomenon and vice versa. The Casimir effect in non-Abelian gauge theory and its influence on mass-scales and phases of the theory is discussed.*