Abstract

We study the Yang–Mills theory and quantum gravity at finite temperature, in the presence of Lagrange multiplier fields. These restrict the path integrals to field configurations, which obey the classical equations of motion. This has the effect of doubling the usual one-loop thermal contributions and of suppressing all radiative corrections at higher-loop order. Such theories are renormalizable at all temperatures. Some consequences of this result in quantum gravity are briefly examined.

Résumé

Nous étudions la théorie de Yang–Mills et la gravité quantique à température finie, en présence de champs de multiplicateurs de Lagrange. Ces derniers restreignent les intégrales de chemin à des configurations de champ qui obéissent aux équations classiques du mouvement. Ceci a l'effet de doubler les contributions thermiques à une boucle usuelles et de supprimer toutes les corrections radiatives aux ordres plus élevés. De telles théories sont normalisables à toutes les températures. Nous examinons brièvement quelques conséquences de ce résultat en gravité quantique. [Traduit par la Rédaction]

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