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Implications of Poincare' symmetry for thermal field theories

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The canonical partition function of a thermal system expressed in a moving frame has a natural implementation in the Euclidean path-integral formulation in terms of shifted boundary conditions. The Poincare' invariance underlying a relativistic theory implies a set of Ward identities among the correlators of the energy-momentum tensor which have also interesting applications in lattice field theory. In particular, they offer identities to define non-perturbatively the energy-momentum tensor and novel ways to compute the equation of state of the theory. Numerical results in the SU(3) Yang-Mills theory for the renormalization constants of the energy-momentum tensor and for the entropy density will also be presented.

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