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## The energy-momentum tensor in lattice QCD and the Equation of State

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We present a new theoretical and practical strategy to renormalize non-perturbatively the energy-momentum tensor in lattice QCD based on the framework of shifted boundary conditions. As a preparatory step for the fully non-perturbative calculation, we apply the strategy at 1 loop in perturbation theory determining the renormalization constants both of the gluonic and of the fermionic components. Using shifted boundary conditions, the entropy density of QCD is directly related to the expectation value of the space-time components of the renormalized energy-momentum tensor. We then discuss first results of numerical simulations of QCD with 3 flavours of Wilson quarks for temperatures between 2.5 GeV and 80 GeV.

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