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Gradient flow and energy-momentum tensor in lattice gauge theory MASAKIYO KITAZAWA, MASAYUKI ASAKAWA, Osaka University, TETSUO HATSUDA, RIKEN, TAKUMI IRITANI, YITP, ETSUKO ITOU, KEK, HIROSHI SUZUKI, Kyushu University — Defining the energy-momentum tensor (EMT) in lattice gauge theory is a nontrivial problem, because of the explicit breaking of the Poincare invariance in lattice regularization. Recently, on the basis of the Yang-Mills gradient flow a construction of the EMT on the lattice is proposed. We apply this EMT to the analysis of the bulk thermodynamics of the SU(3) gauge theory. It is shown that the energy density and pressure measured by taking the thermal expectation values of the EMT well agree with the previous results. Applications to the measurement of correlation functions will also be discussed.

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