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## Dual QCD Fuzzy Bag and Strongly Interacting Quark-Gluon Plasma

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Utilizing the dual QCD model in terms of the magnetic symmetry structure of non-Abelian gauge theories, the modified version of the dual QCD hadronic bag has been constructed in term of fuzzy bag which mainly satisfy the main qualitative feature observed for a strongly interacting QGP. Such picture identifies the new degrees of freedom as thermal monopoles such that the QCD matter behaves as a Semi-Quark Gluon Plasma depicting the suppression of the color electric degrees of freedom and emergence of chromomagnetic monopoles. The analysis of trace anomaly, conformal measure, free energy change, plasma parameter and thermal monopole density around the critical temperature are in good agreement with the strongly interacting nature of QGP. The study of the non-equilibrium and

dissipative effects during the quark-hadron phase transition have been studied in terms of transport coefficients and their associated relaxation time which characterizes how strongly particle interact and move collectively around the transition region. Moreover, within the framework of dual QCD based hadronic and fuzzy bag, the electric and heat conductivity for the strongly interacting QGP phase has been investigated. The numerical estimation of these parameters provides a clear indication of the liquid regime of QGP phase leading to a non-conformal and non-monotonic behavior in QGP phase transition.

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