# AdS/CFT Gravity Dual for High Energy Collisions

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Holographic description of N=4 SYM theory in strong coupling regime can be achieved via AdS/CFT correspondence.Large number of applications use this tool but most of them are done in a static setting, with either pure AdS (as is for example our calculation [1] of the stress tensor of a static dipole) or at fixed temperature via Witten's AdS black hole metric (as are calculations of Gubser et al and Yaffe et al of the "conical flow".)

High energy collisions in QCD are very difficult problems. They include non-equilibrium physics and involve different scales and different coupling regimes. Arguments suggested recently put forward a view that QCD has certain "strong coupling window". In particular, Brodsky and Teramond and Shuryak [2] have argued that the power scaling observed for large number of exclusive processes is not due to perturbative QCD but to a strong coupling regime in which the running is absent and quasi-conformal regime.

The picture we study is similar to well known Lund model, with QCD strings stretched by departing partons. The difference is that now strings are "gravity dual" ones and they fall into the IR direction of $AdS_5$, departing from our world rather than being broken. The details of their motion was studies in our paper [3].

In more recent paper [4] we calculated the stress tensor of excited matter, created by gravity perturbations calculated from linearized Einstein eqns. We found that closed strings ("stones") falling into AdS center produce *no* stress tensor at all. The falling open strings, connected to receding charges, do produce a nonzero stress tensor which we found analytically from time-dependent linearized Einstein equations in the bulk. It corresponds to exploding non-equilibrium matter: we discuss its behavior in detail, including its internal energy density in a co-moving frame and the "freezeout surfaces". We then calculate what happens for the ensemble of multiple strings, e.g. for a colliding walls of color charges (so to say, a strongly coupled Color Glass).

## References

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