

A8 Tests and applications of the AdS/CFT correspondence

The project is devoted to tests and applications of the correspondence between gauge field theories and string theories (AdS/CFT). Our main emphasis will be on the following topics: Analysis of new relations between strings and observables in the gauge theory mediated by Wilson loops, holographic realization of anomalies and entanglement entropies as well as applications to problems of QCD at strong coupling, in particular to the quark gluon plasma. The emphasis on Wilson loops is due to the very recently proposed mapping of on shell gluon and quark scattering amplitudes as well as of mixed on/off shell quantities to the dual string via AdS/CFT. Here the study of Wilson loops for light-like contours and their string theoretical realization via minimal surfaces will be of crucial interest. We in particular study the question of symmetries and integrable structures for scattering amplitudes in the AdS/CFT system.