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Spectrum of quarks in QCD2

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Using an exact integrodifferential equation, the spectral properties of the gauge invariant quark two-point Green's function are analyzed in two-dimensional QCD in the large N_c limit. The singularities of the Green's function arise from contributions of the colored sector of quarks (here in the fundamental representation) and give information about their spectrum. The problem is solved analytically. The Green's function is found to be infrared finite. The singularities are located on the positive real axis of the momentum squared and are represented by a denumerable infinite number of threshold type branch points with power -3/2 starting at positive mass values, which lie from a minimal value up to infinity. The emergence of strong threshold singularities is an indication that quarks could not be observed as free asymptotic states.
Reference: Phys. Rev. D 81, 114008 (2010); arXiv, 1003.5099 [hep-ph].

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