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Bootstrapping gauge theories

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We propose the Gauge Theory Bootstrap, a method to compute the pion S-matrix that describes the low energy physics of the strong interaction and other similar gauge theories. The phase shifts of the S0, P1, S2 waves obtained are in good agreement with experimental results. The only numerical inputs are the quark mass m_q, the QCD scale Lambda_QCD, the pion mass m_\pi and the pion decay constant f_\pi without any other experimental data. We make use of the form-factor bootstrap recently proposed by Karateev, Kuhn and Penedones together with a finite energy version of the SVZ sum rules.

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