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Decay constants of the pion and its excitations in holographic QCD

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There is a remarkable prediction of QCD that the leptonic decay constants of the excited states of the pion are dramatically suppressed relative to that of the ground-state pion - in the chiral limit, the decay constants of the excited pions are exactly zero. Although within a quark model perspective a suppression of a leptonic decay constant for excited states is expected, as it is proportional to the wave-function at the origin, there is, however, no a priori reason, within such a perspective, for the dramatic suppression predicted by QCD. Lattice computations give conflicting results. In the present talk we present results of a recent study of the structure of excited pions within a chiral holographic QCD model; we present results on the leptonic decay constants of pion's excited states and present new predictions concerning their quark mass dependence. Comparisons are made with corresponding results obtained in light-front holography.

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