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The chiral and angular momentum content of the ρ -meson

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The variational method allows one to study the mixing of interpolators with different chiral transformation properties in the nonperturbatively determined physical state. It is then possible to define and calculate in a gauge-invariant manner the chiral as well as the partial wave content of the quark-antiquark component of a meson in the infrared, where mass is generated. Using a unitary transformation from the chiral basis to the $^{2S+1}L_J$ basis one may extract a partial wave content of a meson. We present results for the ρ meson using a simulations with $N_f = 2$ dynamical quarks, all for lattice spacings close to 0.15 fm. We point out that these results indicate a simple 3S_1 -wave composition of the ρ meson in the infrared, like in the SU(6) flavor-spin quark model.

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talk

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