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VECTOR MESON MODELS OF STRONGLY INTERACTING SYSTEMS

THESIS FOR DOCTOR OF PHILOSOPHY

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Abstract

The consequences of current conservation for vector meson models are examined. As an example of this, the ρ - ω mixing model for the isospin violation seen in the pion electromagnetic form factor is studied in detail. Assuming current conservation, we predict a strong momentum dependence for vector mixing. As this result also applies to photon-vector meson mixing, in contradiction to traditional photon-hadron models, we describe an equivalent model which includes a momentum dependent coupling of the photon to vector mesons. To ensure that the information obtained previously from the pion form-factor is consistent with conserved current picture, we redo the fit to data and find a considerable model dependence to the quantities of interest that is *not* a consequence of momentum dependence.

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