News from the Goldstone-Boson-Exchange Chiral Quark Model

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The chiral constituent quark model based on Goldstone-boson-exchange as the effective hyperfine interaction between constituent quarks has performed well for the description of the spectroscopy of all light and strange baryons [1]. Originally the model was constructed with the spin-spin component of the pseudoscalar exchange only [2]. Recently it has been extended to include all force components (central, tensor, spin-orbit) and furthermore vector and scalar exchanges [3,4]. Also, rigorous semirelativistic solutions of the three-quark problem have been provided [5]. We discuss the present status of the development of the Goldstone-boson-exchange chiral quark model.

The model, in different variants, has already been applied (by several groups) to various problems beyond baryon spectroscopy. One has thus obtained valuable insight into its performance more generally in low- and intermediate-energy hadron processes. We summarize the corresponding results and discuss them in comparison to other constituent quark models and/or (effective) approaches to low-energy QCD.

References

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