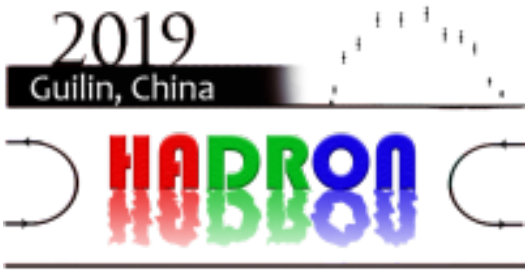

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Role of the tensor force in the heavy hadronic molecules

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Exotic hadrons close to the hadron-hadron threshold have been one of the interesting topics in the hadron and nuclear physics. Especially, in the heavy quark sector, some of the quarkonium-like states called XYZ and the hidden-charm pentaquark Pc near the thresholds have been discussed as a hadronic molecule. The hadronic molecules is realized as a loosely bound state of a hadron composite system. In the formation of such molecules, the one-pion exchange potential (OPEP) working as a long range force is considered to have an important role. The tensor force of the OPEP is well-known as the driving force of atomic nuclei, and is emphasized in the heavy quark sector thanks to the heavy quark spin symmetry.
In this talk, we study the hadronic molecules of heavy meson and heavy baryon, which can be compared with the pentaquark Pc reported by LHCb. The coupled channel Schr\"odinger equations of the heavy meson and heavy baryon are solved. Due to the heavy quark symemtry, various meson-baryon channels are mixed in the systems. The full coupled channel analysis including channels with large orbital angular momenta are performed, because the tensor force of the OPEP yields an attraction in the mixing of those channels. We investigate the formation mechanism of the hadronic molecules in the heavy quark sector and estimate the role of the tensor force.

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