Structures of $(\Omega\Omega)_{0^+}$ and $(\Xi\Omega)_{1^+}$ in Extended Chiral SU(3) Quark Model

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Abstract: The structures of $(\Omega\Omega)_{0^+}$ and $(\Xi\Omega)_{1^+}$ are studied in the extended chiral SU(3) quark model in which vector meson exchanges are included. The effect from the vector meson fields is very similar to that from the one-gluon exchange (OGE) interaction. Both in the chiral SU(3) quark model and in the extended chiral SU(3) quark model, di-omega $(\Omega\Omega)_{0^+}$ is always deeply bound, with over one hundred MeV binding energy, and $(\Xi\Omega)_{1^+}$ binding energy is around 20 MeV. An analysis shows that the quark exchange effect plays a very important role for making di-omega $(\Omega\Omega)_{0^+}$ deeply bound.

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