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Dibaryon candidates in decuplet baryons from lattice QCD

In recent years, there is a renewed interest in the dibaryons due to exclusive measurements in hadron reactions as well as the direct measurement in relativistic heavy-ion collisions. In this talk, we present the result of the first principle calculation using lattice QCD. Particularly we focus on the study for dibaryon candidates involving with the decuplet baryon: (i) the Delta-Delta system with the heavy pion mass, and (ii) the Omega-Omega system with the physical pion mass. Our result of the Delta-Delta interaction is that in the $7S_3$ channel, only an strongly attractive interaction (no repulsive core) appears, which leads to a bound state of two-Delta's, the so-called "ABC effect", observed as a resonance of two-nucleons in experiment by CELSIUS/WASA Collaboration. The result of the Omega-Omega interaction in the $1S_0$ channel at physical point shows a shallow bound state, which is similar to deuteron.

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