

### 3) “Universality of Efimov states in cold-atom with van der Waals and dipole interaction”

**by Kazuki Oi (Tohoku University)**

**Time and Date: 13:00-15:30, Feb 17, 2025**

**Place: Room 745, Science Complex B (H-03) (hybrid)**

**Registration: "<https://us02web.zoom.us/meeting/register/3eUGLMGbTh-nexYxiw4dlg>"**

Cold atoms are atomic gases that are cooled at almost zero temperature by laser technology. In cold atom systems, by using the Feshbach resonance, it is possible to tune the strength of interaction between cold atoms, and various strongly correlated systems have been realized with cold atoms. One of the strongly correlated phenomena observed in cold atoms is the Efimov state. If you consider a strongly correlated 3-body system, this 3-body system exhibits 3-body bound states featuring discrete scale invariance. Efimov states appear in various 3-body systems, for example, cold atoms, magnon, and nuclear systems, and are called universal phenomena in 3-body systems. In 2022, an experimental group at Kyoto University realized the Feshbach resonance in Er-Li mixtures. This system is expected to exhibit fermionic Efimov states. However, Er has a large magnetic moment, and we have to take into account the effect of dipole interaction in addition to van der Waals interaction. Therefore, we investigated how the dipole interaction affects the universality of Efimov states.

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