

## **What can we learn about near-resonance quantum gases from 2- and 3-atom problems**

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Recently, quite remarkable progress has been made to probe many-body correlations in quantum gases near resonance. Theoretically, although we are reasonably successful in a few special limits, in general the subject of unitary gases represents a major challenge in theoretical physics because of the lack of controllable theoretical approaches. In many cases, even a qualitative picture is absent. In this talk, I am going to discuss a few cases with partial successes and illustrate what we have learned from the few-body physics. Our studies suggest that 3D Bose gases near resonance are nearly fermionized, to certain extent analogous to the one dimensional Tonks-Girardeau gases. Towards the end of the talk, I will also briefly discuss the non-universal aspect of the nearly fermionized Bose gases and the role of Efimov physics.