

# SÉMINAIRE du GROUPE THÉORIE



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### Universal States and Efimov Physics in Fermionic Mixtures

The system of few identical fermions interacting resonantly with a distinguishable atom exhibits a rich and interesting physics, including universal states and the celebrated Efimov effect. The (2+1) system, composed of two heavy fermions and lighter atom, supports a universal trimer state if the ratio of the particle masses exceeds critical value. For even larger mass ratio the system becomes Efimovian, introducing a three-body scale and showing geometric series of bound states. Interestingly, this trend continues in the (3+1) system as well as in the (4+1) system, having their own universal states and pure (N+1)-body Efimov effects. Adding another particle, however, this series seems to stop. This should be a sign of a shell structure and screening effects, which may shed light on the crossover from the few-body systems to the many-body polaron case.

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*IPN, Bât. 100, Salle A015*