THOMAS MOSER, IST Austria

Stability of fermionic particle systems with point interactions

Unlike the bosonic case where point interactions lead to instability because of the Thomas/Efimov effect, stability can be proven for a system of fermions under suitable conditions. In particular, the 2+1 fermionic system is well understood, and it turns out that there is a critical mass ratio (between the two species of particles) determining stability. We were able to extend this result to the N+1 system, i.e. many fermions and one impurity, showing that the energy of this many-body system is bounded from below uniformly in the particle number for certain mass ratios. Beside these impurity problems we were also able to show a stability result for the 2+2 system, i.e. two species of fermions with two particles each. In my talk I will introduce the point interacting fermion model, discuss the arising difficulties and the recent developments for the N+1 and the 2+2 case.