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## **Ultracold three** –body atomic clusters

This work is aimed at a theoretical investigation of the helium and neon atomic clusters. Calculations of ultracold three - body clusters require accurate methods, without physical approximations, suitable for solving three - body bound state and scattering problems in configuration space. One of the effective methods for studying three - particle systems is based on using the differential Faddeev equations in the total angular momentum representation. We developed a numerical algorithm for solving differential Faddeev equations. The developed numerically effective computational scheme, especially in combination with an option of using multiple processors, makes it possible to calculate wide range of three - body problems. We applied developed numerical algorithm for calculating the bound states energy of the helium and neon atomic clusters. The results obtained are compared with previous published results.

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