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Lehrstuhl für Analysis und Modellierung

**Lehrstuhl-Seminar  
Sommersemester  
2020**

**Prof. Guido Schneider**  
Universität Stuttgart

**The monoatomic FPU system as a limit  
of a diatomic FPU system**

**30. April 2020 - 10:15**  
**WebEx-Meeting**

Abstract: We consider a diatomic infinite Fermi–Pasta–Ulam (FPU) system with light and heavy particles. For a small mass ratio, we prove error estimates for the approximation of the dynamics of this system by the dynamics of the monoatomic FPU system. The light particles are squeezed by the heavy particles at the average value of their displacements. The error estimates are derived by means of the energy method and hold for sufficiently long times, for which the dynamics of the monoatomic FPU system is observed. The approximation result is restricted to sufficiently small displacements of the heavy particles relatively to each other. This is joint work with Dmitry Pelinovsky.