Topic	**Inrinsic Localized Vibrations in nonlinear one dimensional crystals.**
Topic is suitable for	Graduation thesis of bachelor students
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Annotation	It is known that the loss of periodicity in a crystal lattice causes local oscillations in real crystals. At the end of the 1980s, it was theoretically demonstrated that the fourth-order high anharmonicity of an ideal single crystal could result in intrinsic localized modes (ILMs). Siever and Takeno studied the classical oscillation dynamics in one-dimensional simple crystals. As is to all non-linear oscillations, the frequencies of anharmonic oscillations depend on the amplitude. ILM can be localized on any atom in a crystal, and some thermodynamic and space-configurational properties of crystals with the strong anharmonicity is related to ILM for example such as solid helium crystals and ferroelectrics. In the framework of the bachelor thesis, the molecular dynamics method for study of the properties of stationary and mobile ILM in one-dimensional crystals will be used.
Expectation for candidate	General Physics course, Higher Mathematics course, the work in the Linux environment, and knowledge of Fortran, Python or C programming language.