

The method of Smoothed Particle Hydrodynamics is applied to the phenomenon of mountain waves - atmospheric internal gravity waves generated by flows over topography. General aspects of the method and the alternative derivations of the theory using Hamiltonian continuum mechanics are discussed. The basic explanation of the physical mechanisms that generate the internal gravity waves and the review of the current state of the numerical simulation of the matter are provided. A code in the Julia programming language is written to simulate the phenomenon of mountain waves using the symplecticity of the SPH equations by utilizing a symplectic integrator. The results obtained are compared to those from the literature, and the applicability of the SPH method in meteorology is also discussed.