Special Issue

Numerical Simulations of Nonlinear Waves

Message from the Guest Editor

Nonlinear waves are widely present in both nature and in artificial systems. Examples of such waves are surface gravity waves, surface capillary waves, internal waves in the ocean and atmosphere, Rossby waves in the ocean, and plasma waves. The most famaous example of a model system for such waves is the celebrated Fermi–Pasta–Ulam-–Tsingou chain introduced in the fifties in Los Alamos Lab to study the heat propagation in crystals. The first numerical simulation of nonlinear waves was the numerical experiments conducted by Fermi, Pasta, Ulam, and Tsingou on their chain in Los Alamos. Numerical experiments of nonlinear waves are carried out ever since. We went a long way since then, with multiples CPUs, multiple cores, GPUs, and even quantum computers. In modern times, numerical experiments are even seen as a legitimate replacement for real-life experiments. This Special Issue will provide an opportunity to share modern cutting-edge research on modelling nonlinear waves on modern computers to gain insights into the nonlinear wave propagation and interactions.

Guest Editor

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