

Abstract

In this talk I will consider a subtype of what are called 'exponential integrators'. More precisely, multistep methods which integrate exactly the stiff part of a second-order partial differential equation and which I will denote by multistep cosine methods. Much emphasis will be given on symmetric methods of this type so that Hamiltonian wave equations are integrated in a very efficient way, with explicit, stable and qualitatively correct integrators. In particular, a symmetric fourth-order multistep cosine method will be constructed. Under assumptions of regularity of the solution, some results will be shown on its convergence, resonances and possible ways to filter them.