Applications of Lie group integrators and Filon quadrature for Dynamical Systems

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The talk will address the issues of numerical approximations of dynamical systems in presence of high oscillation. We present Lie group integrators for solving integral commutators and Filon quadrature which adds to the efficiency of approximation once the frequency of oscillation grows. In this context waveform relaxation methods in combination with Lie group methods and Filon quadrature rule appear to be highly effective tools of approximation for a very little computation effort. Numerical examples support this work.

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