

# Spectral Hamiltonian Boundary Value Methods (SHBVMs) for the numerical solution of ODE problems

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## Introduction

Recently, the numerical solution of Hamiltonian problems has been attacked by using the class of energy-conserving Runge-Kutta methods named Hamiltonian Boundary Value Methods (HBVMs) (see, e.g., the monograph [2] or the review paper [3]). Moreover, they proved to be very effective also when solving stiffly/highly-oscillatory problems [4, 5], if regarded as spectral methods in time. A complete analysis of their use by using this latter approach can be found in the recent paper [1]. In this talk, we show how the theoretical results of this analysis can be implemented to provide a numerical code able to handle general ODE-IVPs.

## References

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- [4] L. Brugnano, F. Iavernaro, J.I. Montijano, L. Rández. Spectrally accurate space-time solution of Hamiltonian PDEs. (2018) <https://doi.org/10.1007/s11075-018-0586-z>
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