On the periodic solutions of discrete Hamiltonian systems

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Abstract

Almost all numerical methods for solving conservative problems cannot avoid a more or less perceptible drift phenomenon. Considering that the drift would be absent on a periodic or quasi-periodic solution, one way to eliminate such unpleasant phenomenon is to look for discrete periodic or quasi-periodic solutions. It is quite easy to show that only symmetric methods are able to provide solutions having such behavior [2]. The open problem is to find the suitable stepsize and to be sure that the obtained periodic solution is stable. In the preliminary results here presented we show that this problem is strongly connected with a classical problem of evolution of planar polygons already discussed by Schoenberg in [3] and more recently treated in [1].

References

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