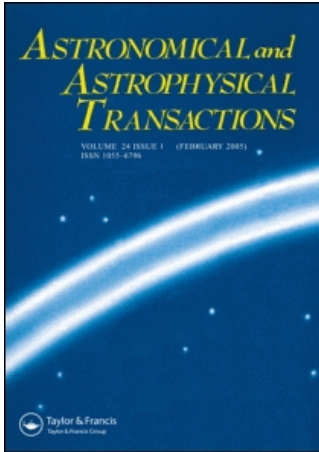


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A LONG-LIVED SPIRAL STRUCTURE IN N -BODY SIMULATIONS: WORK IN PROGRESS[†]

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Work is in progress for constructing physically consistent N -body models capable of supporting a long-lived spiral structure. Such models would represent a missing link between theory and observations of disc galaxies.

KEY WORDS Celestial mechanics, stellar dynamics – N -body simulations, spiral structure

SUMMARY

As a practical application of the analysis carried out by Romeo (1993) (hereafter Paper 1), work is in progress for constructing physically consistent N -body models capable of supporting a long-lived spiral structure, and for evaluating the secular heating induced by it. Such models would represent a missing link between theory and observations of disc galaxies. For this purpose, we are writing auxiliary programs for selecting input values consistent with the prescription (♠) and the local stability criterion (♣) given in Paper 1, and corresponding to regimes of spiral structure in which a fruitful comparison between theory and simulations can be made. At the same time, we are modifying an N -body code developed by Thomasson (1989) for setting the disc up more satisfactorily, and we are writing programs for simulation-data reduction.

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