

Abstract Submitted
for the MAR05 Meeting of
The American Physical Society

Geometric Phase of Phase Space Trajectories: Mobius Strip and Nonlinear Oscillators¹ RADHA BALAKRISHNAN, Institute of Mathematical Sciences, Chennai, India, INDUBALA SATIJA, George Mason University — We present a gauge invariant formulation of associating a geometric phase with classical phase space trajectories. This geometric phase which depends upon the integrated torsion of the trajectory, bears a close analogy to the generalized Berry phase associated with the time evolution of the quantum wave functions. This topological quantity serves as an order parameter signalling phase transitions including novel geometrical transitions. One of the interesting aspects seen in Duffing and other nonlinear oscillators is the sudden jumps in the geometric phase which is accompanied by the divergence of the local torsion and the vanishing of the local curvature. Intriguingly, the analogous phenomenon was seen in a mobius strip when the ratio of the width to the length of the strip exceeds beyond a critical value.

¹The research of IIS is supported by National Science

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Date submitted: 04 Dec 2004

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