



## 复旦大学数学科学学院 数学综合报告会

报告题目: Collective dynamics of coupled second-order oscillators

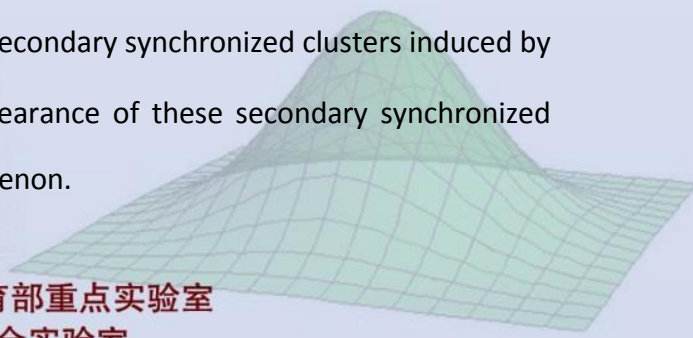
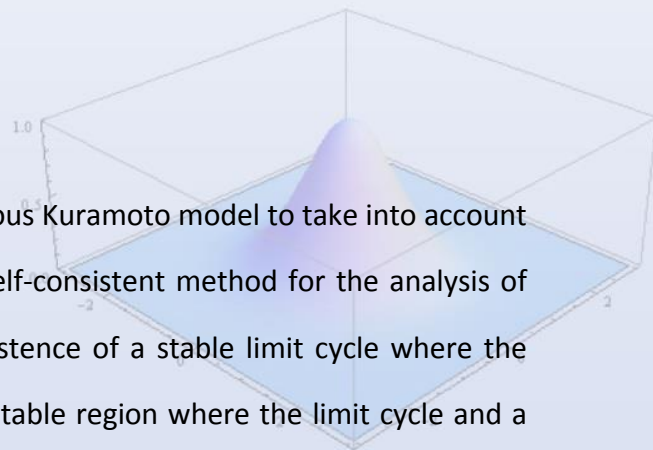
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地点: 光华楼东主楼2001

报告摘要:

Second-order oscillator networks generalize the famous Kuramoto model to take into account the effect of oscillator inertias. The application of the self-consistent method for the analysis of steady states in such systems is complicated by the existence of a stable limit cycle where the dynamics can be only approximately described and a bistable region where the limit cycle and a stable equilibrium co-exist. In this talk we discuss an accurate self-consistent method for such systems. The method agrees very well with numerical results and correctly predicts the bifurcation of coherent steady states from the incoherent (non-synchronized) state. Then we discuss the appearance of oscillatory states in such systems showing that it is a special case of a more general mechanism involving the appearance of secondary synchronized clusters induced by inertia. We give a dynamical explanation for the appearance of these secondary synchronized clusters and describe the role of inertias in this phenomenon.



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