动力系统分支问题研讨会日程 (2022-07-05)

腾讯会议号：126 865 171

时间	报告人	报告题目
10:00–10:40	赵育林	Existence of at most two limit cycles for some non-autonomous differential equations
10:50–11:30	刘长剑	一些二次 Lotka-Volterra 系统的周期函数
午 休		
14:30–15:10	朱长荣	Homoclinic bifurcations for ODE
15:20–16:00	田云	Bifurcation of limit cycles near heteroclinic loops in near-Hamiltonian systems

一些二次 **Lotka-Volterra** 系统的周期函数

刘长剑
中山大学数学学院（珠海）

如果一个二次系统，含有两条或两条以上的不变（实的或复的）直线，则我们称系统是广义 Lotka-Volterra 系统。在这个报告中，我们证明了若含中心的广义 Lotka-Volterra 系统只含实的不变直线，则其周期函数是单调的。

Bifurcation of limit cycles near heteroclinic loops in near-Hamiltonian systems

田云
上海师范大学

In this talk, we study the bifurcation of limit cycles near a heterocilinc loop with hyperbolic saddles in a perturbed planar Hamiltonian system. We present a method for computing the coefficients in the corresponding expansion of the first order Melnikov function. With more those coefficients, more limit cycles could be determined around the heteroclinic loop. An example of studying limit cycles produced from a heteroclinic loop with 2 saddles is investigated to illustrate our method.

Existence of at most two limit cycles for some non-autonomous differential equations

赵育林
中山大学数学学院（珠海）

It is know that the non-autonomous differential equations dx/dt=a(t)+b(t)|x|, where a(t) and b(t) are 1-periodic maps of class C^1, have no upper bound for their number of limit cycles (isolated solutions satisfying x(0)=x(1)). We prove that if either a(t) or b(t) does not change sign, then their maximum number of limit cycles is two, taking into account their multiplicities, and that this upper bound is sharp. We also study all possible configurations of limit cycles. Our result is similar to other ones known for Abel type periodic differential equations although the proofs are quite different.

Homoclinic bifurcations for ODE

朱长荣
重庆大学

Consider an autonomous ordinary differential equation in R that has a homoclinic solution asymptotic to a hyperbolic equilibrium. The homoclinic solution is degenerate in the sense that the linear variational equation has d bounded, linearly independent solutions. We study bifurcation of the homoclinic solution under periodic perturbations. Using exponential dichotomies and Lyapunov-Schmidt reduction, we obtain general conditions under which the perturbed system can have transverse homoclinic solutions and nearby periodic or chaotic solutions.