Singular Value of Three-Multiple Nilpotent Singular Point

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In this talk, singular value of three-multiple nilpotent singular point is defined and computation method is give. When the three-multiple nilpotent singular point is a monodromic singular point, singular value can be treated as focal values. When the three-multiple nilpotent singular point is a saddle, singular value can be treated as analytical saddle values. We unify the focus quantity with the saddle point quantity of three-multiple nilpotent singular point. As an application, a class of quintic system with a three-multiple nilpotent origin is studied, analytical center conditions and analytical integral conditions of saddle are obtained respectively. Moreover, limit cycles bifurcation from the origin or infinity are also discussed. This is a joint work with Professor Pei Yu and Yuanyuan Liu.