(Session Bifurcation) : Limit cycles bifurcating on double-reversible symmetric centers

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Symmetries in ordinary differential systems have a long history. As early as 1915, Birkhoff employed them in his work on the restricted three-body problem. Certain types of symmetries play a crucial role in the classical center-focus problem, which seeks to determine whether a monodromic singular point is a center or a focus. In planar analytic differential systems, the presence of a reversible symmetry ensures that a monodromic point is a center.Recent studies have explored the existence of simultaneous centers in planar systems. These and other findings motivate our investigation into the existence of simultaneous centers in a specific class of planar systems with double reversible symmetry. More precisely, we examine the dynamics surrounding simultaneous centers in planar cubic systems with reversible symmetry with respect to both the xxx- and yyy-axes. We characterize their normal forms, analyze possible center configurations, and investigate the number of limit cycles that such systems can exhibit under cubic perturbations. These finding shall be discussed in this talk.This is a joint work with Beatriz de Carvalho (PhD student at ICMC-USP) and Leonardo da Cruz (postdoc at ICMC-USP).

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