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Structural Stability of Planar Bimodal Linear Systems

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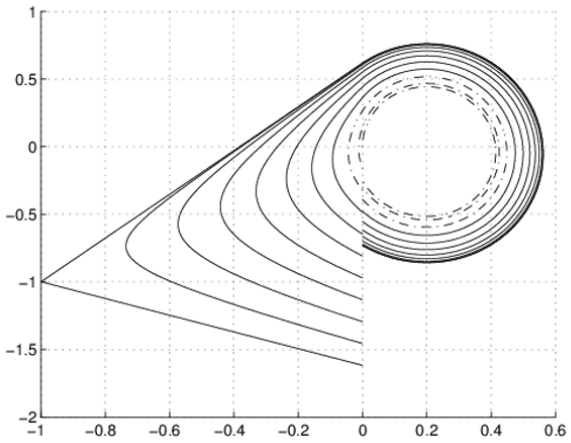

Structural stability ensures that the qualitative behavior of a system is preserved under small perturbations. We study it for planar bimodal linear dynamical systems, that is, systems consisting of two linear dynamics acting on each side of a given hyperplane and assuming continuity along the separating hyperplane. We describe which one of these systems is structurally stable when (real) spiral does not appear and when it does we give necessary and sufficient conditions concerning finite periodic orbits and saddle connections. In particular, we study the finite periodic orbits and the homoclinic orbits in the saddle/spiral case.

http://dx.doi.org/10.1155/2014/892948

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