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EXPLORING THE CENTER AND CYCLICITY PROBLEMS OF PSVF WITH
CROSS-TYPE SWITCHING REGION

In this work, the center and the cyclicity problems inside a family of piecewise smooth vector fields (PSVF) with cross-type switching region was analyzed. We show 4 piecewise-smooth center families, all of them having generically at least cyclicity 4 up to the first order of Lyapunov constants. Besides, we provide a weak focus for which at least 7 small-amplitude crossing limit cycles bifurcate from the origin. The studied system was motivated by modeling ship maneuvers.

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