A Systematic Study of Two-Layer Canard Cycles

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Abstract

The talk discusses a published paper [1] that is joint work with F. Dumortier and R. Roussarie. We deal with 2-layer canard cycles, extending well-known results of 1-layer canards such as the one appearing in the classical Van der Pol system. We provide precise results on the number and the bifurcations of the limit cycles that can be created from the canard cycles, confirming that both the type of the layers and the nature of the connections between the layers make a difference. We also prove an upperbound on the cyclicity of a large class of 2-layer canard cycles.

References

[1] P. De Maesschalck, F. Dumortier, and R. Roussarie. A systematic study of two-dimensional 2-layer canard cycles. *Nonlinearity*, 38(5), 2025.