

Discontinuous piecewise linear differential systems with two zones in the plane: study of limit cycles

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General piecewise linear systems have been attracted great attention in the past years specially due to its simplicity. Landmark in this area is the work of Andronov et al. in [1]. Here we are interested in piecewise linear systems in the plane with two zones, that is piecewise linear systems in the plane where the two linearity regions are separated by a straight line \mathcal{L} .

We study the existence of limit cycles in a one–parameter family of discontinuous piecewise linear differential systems with two zones in the plane. We prove that for suitable values of the parameter the family can have at least three limit cycles.

References

- [1] A. Andronov, A. Vitt and S. Khaikin, *Theory of Oscillations*, Pergamon Press, Oxford, 1966.
- [2] D.C. Braga and L.F. Mello, *Limit cycles in a family of discontinuous piecewise linear differential systems with two zones in the plane*. Preprint.