

Distributional chaos and heteroclinic solutions in planar polynomial ODEs

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We investigate the equation

$$\dot{z} = P(\bar{z}, t)$$

in complex number notation, where P denotes polynomial in variable \bar{z} . We are especially interested in vector fields P which have two branches of two simple zeros. We prove the existence of at least two periodic solutions and infinitely many heteroclinic solutions between them. We also show the mechanism of generating distributional chaos in the equation. This approach is different from [1], [2] and [3] where distributional chaos is investigated in context of infinitely many periodic solutions.

References

- [1] *P. Oprocha, P. Wilczyński*: Distributional chaos via semiconjugacy. *Nonlinearity* 20 (2007), 2661–2679.
- [2] *P. Oprocha, P. Wilczyński*: A study of chaos for processes under small perturbations. *Publ. Math. Debrecen.* 76 (2010), 101–116.
- [3] *P. Oprocha, P. Wilczyński*: Factor maps and invariant distributional chaos. Preprint.