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ON POINCARÉ–BENDIXSON THEOREM AND NON-TRIVIAL MINIMAL SETS IN PLANAR NONSMOOTH VECTOR FIELDS

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Abstract: In this paper some qualitative and geometric aspects of nonsmooth vector fields theory are discussed. A Poincaré–Bendixson Theorem for a class of nonsmooth systems is presented. In addition, a minimal set in planar Filippov systems not predicted in classical Poincaré–Bendixson theory and whose interior is non-empty is exhibited. The concepts of limit sets, recurrence, and minimal sets for nonsmooth systems are defined and compared with the classical ones. Moreover some differences between them are pointed out.

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