



Positive Invariance and Differential Inclusions with Periodic Right-Hand Side

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Abstract: The paper is concerned with the non-autonomous ordinary differential inclusion in finite dimensional space with periodic, compact, but not necessarily convex valued right-hand side. The existence of periodic solution for such an inclusion which stays in a strongly positively invariant (under inclusion) set continuously depending on the time parameter is proved. The connection between the density principle and stability of the set of all periodic solutions on positively invariant sets with respect to internal and external perturbations of the inclusion is derived. The special attention is paid to the property of strong positive invariance which is studied here in terms of Lyapunov functions.

Keywords: *Differential inclusion; periodic solution; positively invariant set; Lyapunov function; stability of periodic solutions set; density principle.*

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