28. Cetaev theorem (instability)

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Instability result:

$x_e = 0$ is unstable if $\exists$ a C^1 $V(x)$ s.t.:

a) $P = \{x : V(x) > 0\}$ has x_e as accumulation point

b) $\dot{V} > 0$ in $U = P \cap S(x_e, r)$, for some $r > 0$

The theorem is useful because while the necessary and sufficient condition for stability is the existence of a Lyapunov function, we cannot exclude it a priori without an instability criterion.