Lyapunov stable

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Related topic	AsymptoticallyStable
Related topic	AttractingFixedPoint
Related topic	StableFixedPoint
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Related topic	UnstableFixedPoint

A fixed point x^* is *Lyapunov stable* if trajectories of nearby points x remain close for future time. More formally the fixed point x^* is Lyapunov stable, if for any $\epsilon > 0$, there is a $\delta > 0$ such that for all $t \geq 0$ and for all $x \neq x^*$ it is verified

$$d(x^*, x) < \delta \Rightarrow d(x^*, x(t)) < \epsilon.$$

In particular, $d(x^*, x(0)) = 0$.