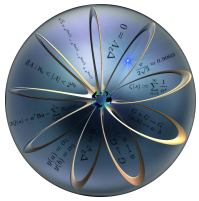

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hyperbolic fixed point

Canonical name	HyperbolicFixedPoint
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Related topic	StableManifold
Related topic	HyperbolicSet
Defines	hyperbolic periodic point
Defines	source
Defines	sink
Defines	saddle

Let M be a smooth manifold. A fixed point x of a diffeomorphism $f\colon M \to M$ is said to be a **hyperbolic fixed point** if $Df(x)$ is a linear hyperbolic isomorphism. If x is a periodic point of least period n, it is called a **hyperbolic periodic point** if it is a hyperbolic fixed point of f^n (the n-th iterate of f).

If the dimension of the stable manifold of a fixed point is zero, the point is called a **source**; if the dimension of its unstable manifold is zero, it is called a **sink**; and if both the stable and unstable manifold have nonzero dimension, it is called a **saddle**.