

## Normal forms near a symmetric planar saddle connection

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We consider vector fields of the form

$$\begin{cases} \dot{x} = \left(\frac{q}{2} + O(1-x^2)\right)(1-x^2) + O(y), \\ \dot{y} = (px + O(1-x^2))y + O(y^2), \end{cases}$$

which contain a separatrix connection between hyperbolic saddles with opposite eigenvalues where the connection is fixed. These situations appear in the local study of non-elementary singular points or after compactification of the phase space. We provide smooth semi-local normal forms in vicinity of the connection, both in the resonant and non-resonant case. First, a formal conjugacy is constructed near the separatrix. Then, a smooth change of coordinates is realized by generalizing known local results near the hyperbolic points.

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