Publicacions Matemàtiques, Vol **41** (1997), 243–268.

SMOOTHNESS PROPERTY FOR BIFURCATION DIAGRAMS

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Abstract

Strata of bifurcation sets related to the nature of the singular points or to connections between hyperbolic saddles in smooth families of planar vector fields, are smoothly equivalent to sub-analytic sets. But it is no longer true when the bifurcation is related to transition near singular points, for instance for a line of double limit cycles in a generic 2-parameter family at its end point which is a codimension 2 saddle connection bifurcation point. This line has a flat contact with the line of saddle connections. It is possible to prove that the flatness is smooth and to compute its asymptotic properties.