Giblin, P. J.; Zakalyukin, V. M.
Singularities of families of chords. (English. Russian original) Zbl 1049.58041

A chord is a straight line joining two points of a pair of hypersurfaces in an affine space $\mathbb{R}^n$ at which the tangent hyperplanes are parallel. The pair of such points are said to be parallel. On account of the fact, the envelope of the family of chords coincides with the centre of symmetry for a symmetric hypersurface $M$, the envelope is called centre symmetry set (CSS) of $M$. The second author [Tr. Mat. Inst. Steklova 209, 133–142 (1995; Zbl 0883.93008)] and S. Janeczko [Geom. Dedicata 60, 9–16 (1996; Zbl 0868.58015)] have initiated the study of generic singularities of CSS for $n = 2$.

In this note, the singularities of the envelopes of the families of chords determined by generic pairs of plane curves and surfaces in 3-dimensional space are classified and all bifurcation planes of simple boundary singularities (of the corresponding multiplicity) are listed therein.

Reviewer: Om Prakash Singh (Aligarh)

MSC:

58K70 Symmetries, equivariance on manifolds
53A05 Surfaces in Euclidean and related spaces

Keywords:

affine geometry; Minkowski symmetry set; bifurcation diagram; boundary singularity

Full Text: DOI