On Conics in Minkowski Planes

ANDREAS FANKHÄNEL

Faculty of Mathematics, University of Technology Chemnitz, 09107 *Chemnitz, Germany*
andreas.fankhaenel@mathematik.tu-chemnitz.de

Abstract: We study basic geometric properties of metric ellipses, hyperbolas, and parabolas in normed (or Minkowski) planes and obtain results on their shapes as well as respective extensions of further statements well known in the Euclidean plane. For the special case of polygonal norms, we prove a theorem on bunches of Minkowskian ellipses and hyperbolas which are pairwise Birkhoff orthogonal.

Key words: Birkhoff orthogonality, conics, ellipses, hyperbolas, Minkowski plane, parabolas, smooth normed plane, strictly convex normed plane.

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