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SINGULAR POINTS OF ISOPTICS OF OPEN ROSETTES

BY

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Abstract. In our previous papers we considered regular isoptics of k-th order of open rosettes. In this paper we consider open rosettes and their isoptics with singular points. We start with a definition of α-isoptic of k-th order of an open rosette and give a theorem of its parametrization $z_{\alpha,k}(t)$. Next, we present a corollary in which we compute $z'_{\alpha,k}(t)$. For some $t_{k,j}$ we have $z'_{\alpha,k}(t_{k,j}) = 0$, so the isoptic has singular points $z_{\alpha,k}(t_{k,j})$. Then we establish formulas for $z''_{\alpha,k}(t)$ and $z'''_{\alpha,k}(t)$ and use them to determine the kind of singularity of the isoptic (not in every case, however). We show that vectors $\frac{z'_{\alpha,k}(t)}{|z'_{\alpha,k}(t)|}$ and $z''_{\alpha,k}(t)$ are parallel near singular points. Finally we prove the sine theorem and compute curvature of the isoptic without singular points.

Mathematics Subject Classification 2010: 53A04.

Key words: open rosettes, isoptics of open rosettes, parametrization of isoptics, curvature of isoptics, singular points, sine theorem.