ICM 1998, Berlin, Aug. 18–27

Abstracts of Short Communications and Posters

Section:

5. Differential Geometry and Global Analysis

1991 MS Classification: 53A04, 49Q99, 68Q20
Giesen, Joachim, ETH Zuerich, Switzerland
Geometry of One-Manifolds
There is a general theory of irregular curves [1]. This theory is based on inscribed polygons, a concept which fails in higher dimensions (e. g. Schwartz cylinder). Menger [2] proposed an equivalent definition of arc length based on polygons of minimal length. We show, the curvatures of embedded one-manifolds can be equivalently defined via polygons of minimal length. Such a defintion is algorithmic. That is, the polygon of minimal length of a point set can be calculated in principle. There is hope to generalize the concepts to embedded surfaces.
Reference: [1] A. D. Aleksandrov and Y. G. Reshetnyak, General Theory of Irregular Curves, 1989 Kluwer Academic Publishers [2] K. Menger, Untersuchungen ueber allgemeine Metrik *Math. Ann.* **103** 1930, 466–501