
ED TYMCHATYN, University of Saskatchewan
Extending Isotopies of Planar Continua

Let Z be a continuum in the plane and let $h: Z \times [0, 1] \rightarrow C$ be an isotopy starting at the identity. We prove that h extends to an isotopy of the plane. We provide a new characterization of an accessible point in Z and show that accessible points are preserved under the isotopy. We show next that the isotopy can be extended over small hyperbolic crosscuts which are shown to remain small under the isotopy. The proof makes use of the notion of a metric external ray which mimics the notion of a conformal external ray but which is easier to control under the isotopy. It also relies on the existence of a partition of a hyperbolic, simply connected domain U in the sphere into hyperbolically convex sets which have limited distortion under conformal maps to the unit disc.