

## GEOMETRIC METHODS FOR PLANE CONTINUA, I

ABSTRACT. Conformal maps have been a power full tool for studying plane continua. Given a non-separating continuum  $X$  in the sphere  $\mathbb{S}$ , there exists a conformal map  $\varphi : \mathbb{D}^\infty \rightarrow \mathbb{S} \setminus X = U$ , where  $\mathbb{D}^\infty$  is the complement of the closed unit disk in the sphere. The map  $\varphi$  provides a way to impose a coordinate system on  $U$ : one can consider the images of round circles (called *level curves*) and the images of radial line segments with argument  $2\pi\alpha$  (called the *external ray*  $R_\alpha$ ). However, this approach is not satisfactory under metric perturbations of  $X$  (for example an isotopy of  $X$ ).

In this talk we will provide a new coordinate system which will rely only on the metric and, hence, is easy to use when  $X$  is continuously moved. Our goal will be to provide a description of metrically defined “external rays and level curves” and describe a natural way to partition  $U$  into disjoint closed sets.