

**GEOMETRIC MEAN OF CONFORMAL RADII FOR
COMPACT SETS CONTAINED IN A SIMPLY
CONNECTED DOMAIN**

ABSTRACT. The well known results by G. Pólya and G. Szegő assert that the disk has the largest conformal radius among all simply connected domains of a fixed area and, the equilateral triangle and square have the largest conformal radii among all triangles with a given area and among all quadrilaterals with a given area, respectively. In this talk, I will discuss three theorems that extend these results to geometric mean of conformal radii over compact subsets with prescribed positive area, contained in a simply connected domain of a given area, in a triangle of a given area, and in a quadrilateral of a given area, respectively. In addition to that, the geometric mean of conformal radii of rectifiable arcs contained in a simply connected domain will be defined and few related inequalities will be introduced. This is a collaborative work with Dr. Alexander Solynin.