



Institute of Mathematics and Informatics – Bulgarian Academy of Sciences

Sofia 1113, Acad. Georgi Bonchev Str., bl. 8

Analysis, Geometry and Topology Department

Joint Seminar of Analysis, Geometry and Topology Department

On Squeezing Function for Planar Domains

Ahmed Yekta Ökten

Institut de Mathématiques de Toulouse, France

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Abstract. Let Ω be a domain in \mathbb{C}^n such that the set $E(\Omega, B^n)$ of injective holomorphic maps from Ω into the unit ball $B^n \subset \mathbb{C}^n$ is non-empty. The squeezing function of Ω , denoted by S_Ω is defined as

$$S_\Omega(z) = \sup\{r \in (0, 1): rB^n \subset f(\Omega), \quad f \in E(\Omega, B^n), \quad f(z) = 0\}.$$

It follows from the definition that the squeezing function is biholomorphically invariant and roughly speaking, it measures how much a domain looks like the unit ball looking at a fixed point. As expected, the study of the squeezing function leads to nice results about the properties of the invariant metrics on complex domains. The behaviour of the squeezing function is well studied however very few non-trivial explicit formulas of squeezing functions have been found.

In this talk we will establish the explicit formulas of squeezing functions on doubly connected planar domains in an elementary way. With the same method we will also provide bounds to squeezing functions of higher connected domains. Finally, we will conclude by mentioning other results and further questions about explicit formulas of squeezing functions on planar domains.