

İSTANBUL ANALYSIS SEMINARS

RECENT WORK ON GEOMETRIC FUNCTION THEORY

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Abstract: P. Koebe in 1907 sparked the world of function theory by introducing the largest normalized analytic univalent functions in the open unit disc given as

$$k(z) = \frac{z}{(1-z)^2},$$

and later named after him *the Koebe function*. The class of functions f which is univalent and analytic is denoted by S . We can normalize and write the function as follows:

$$f(z) = z + \sum_{n=2}^{\infty} a_n z^n.$$

Throughout the years, this function had been studied by many well-known mathematicians. In 1916, Bieberbach stated that, for $f \in S$, one has $|a_n| \leq n$ for all $n \geq 2$ with equality for the Koebe function k . This problem has been kept as a conjecture for more than 60 years until de Branges gave an elegant proof in 1984 to complete the theorem. Though the conjecture has been settled and many other interesting properties are given, yet there are still many new results obtained enveloping those classical results. The subclasses of S are introduced and studied thereafter. Now, in these recent days, many other new works are introduced. However, those works are based on the original Koebe function and its subclasses. In the talk, some recent topics like q -analogues, concave functions, together with their classes, will be discussed briefly. Some accepted results in [1, 2, 3] and future work will be highlighted.

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References

- [1] H. Aldweby & M. Darus, "Some subordination results on q -analogue of Ruscheweyh differential operator," *Abstr. Appl. Anal.* 2014, Art. ID 958563, 6 pp.
- [2] H. Aldweby & M. Darus, "Partial sum of generalized class of meromorphically univalent functions defined by q -analogue of Liu-Srivastava operator," *Asian-Eur. J. Math.* **7** (2014), no. 3, 1450046, 10 pp.
- [3] M. Darus, I. Aldawish & R.W. Ibrahim, "Some concavity properties for general integral operators," *Bull. Iranian Math. Soc.*, forthcoming.

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