Texas Tech University. Analysis Seminars.

Exercises on the theme of Continuous Symmetrization. Part II.

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ABSTRACT. The original *Symmetrization* (nowadays known as "Steiner symmetrization") was introduced by Jacob Steiner in his attempt to prove classical isoperimetric inequality in 1836. It was used by many authors to prove numerous functional inequalities and to solve numerous extremal problems in Mathematics and Physics. It is well known that Steiner symmetrization changes sets and functions, and therefore their characteristics, globally. Thus, George Polýa and Gabo Szegö asked in 1951 whether or not it is possible to introduce a **continuous version** of Steiner symmetrization which has the same effect as Steiner's symmetrization along the whole path of transformation? Polýa and Szegö themselves suggested such a transformation for the case of convex domains.

In this talk I will discuss this Polýa and Szegö continuous transformation and also show how their continuous symmetrization can be applied to solve particular problems in Complex Analysis and PDE's.