

Berezin transform and Toeplitz operators on polygonal domains

Jari Taskinen, University of Helsinki

Abstract

We consider reflexive Bergman spaces $A^p(D)$ on polygonal domains D of the complex plane. With some restrictions to the angles of the boundary of D , we show that the boundedness of the Toeplitz operator $T_g : A^p(D) \rightarrow A^p(D)$ with a non-negative symbol g is equivalent to the boundedness of the Berezin-transform of g , or to g times area measure being a Carleson-measure. The result in particular holds for all convex polygons, and it is also formulated for more general simply connected domains. The proofs use some classical results on conformal mappings like the Koebe distortion theorem and the Schwartz-Christoffel formula, and the main technical tool consists of a generalized weighted Forelli–Rudin-type estimate.

The talk is a report on author’s paper in *Complex Variables and Elliptic Equations* 67 (2022), 773–787.