Subnormality and moment problems

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Abstract

I. Bounded subnormal operators

– Introduction: spectral measures and Naimark's theorem.
– The Halmos-Bram-Ito theorem.
– Application: Atzmon's theorem for the moment problem on the unit disk.
– Moments on semi-algebraic compact sets.
– Moments and subnormality.

II. Unbounded subnormal operators

–Unbounded normal operators.
–Insufficiency of the Halmos-Bram-Ito condition.
–Arveson's extension theorem.
–Moments in unbounded sets via algebras of fractions.
–A characterization of unbounded subnormal operators.

III. Quaternionic Cayley transform

–Definitions and elementary properties.
–Quaternionic Cayley transform and subnormality.