KRULL DIMENSION OF RINGS OF ANALYTIC FUNCTIONS

MAXIMILIAN LEIST

Abstract. The Krull dimension of a commutative ring R is the supremum over the lengths of all chains of prime ideals in R. The Krull dimension is an important concept in commutative algebra. In this talk we are going to apply this definition to rings that are usually studied from an analytic point of view, such as the ring H^∞ of bounded holomorphic functions on the unit disc or, more generally, the multiplier algebra of a reproducing kernel Hilbert space of holomorphic functions. We are going to consider two methods that can be used to show that such a ring has Krull dimension at least $2^{\aleph_0}$. For example, these methods apply to the multiplier algebras of the Drury-Arveson space and certain Besov spaces, including the classical Dirichlet space. The first method applies to many rings of holomorphic functions on the unit disc and is based on works of von Renteln, Sasane and Kapovich. The second method involves the concept of interpolating sequences and is mostly applied to multiplier algebras of reproducing kernel Hilbert spaces.