Higher Dimensional Spaces of Functions on the Spectrum of a Uniform Algebra

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Abstract. In this paper we introduce a nested family of spaces of continuous functions defined on the spectrum of a uniform algebra. The smallest space in the family is the uniform algebra itself. In the “finite dimensional” case, from some point on the spaces will be the space of all continuous complex-valued functions on the spectrum. These spaces are defined in terms of solutions to the nonlinear Cauchy–Riemann equations as introduced by the author in 1976, so they are not generally linear spaces of functions. However, these spaces do shed light on the higher dimensional properties of a uniform algebra. In particular, these spaces are directly related to the generalized Shilov boundary of the uniform algebra (as defined by the author and, independently, by Sibony in the early 1970s).