Cyclicity in Poletsky-Stessin Weighted Bergman Spaces

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We study the cyclicity of polynomials in Poletsky-Stessin weighted Bergman spaces on various domains in $\mathbb{C}^2$, including the unit ball, the bidisk, and the complex ellipsoid. To this end, we introduce a natural extension of the parameter range for Poletsky-Stessin weighted Bergman spaces on complete Reinhardt domains, yielding a family of spaces that resemble Dirichlet-type spaces on the unit ball. We highlight the differences in the cyclicity behavior of polynomials in these spaces on the bidisk compared to those studied by Bénéteau et al. Finally, we propose several open problems concerning the structure of cyclic polynomials in these spaces.