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$k$-hyponormality and $n$-contractivity for Agler-type shifts

George Exner
Bucknell University, Lewisburg, PA 17837, USA
exner@bucknell.edu

The well-known Bran-Halmos condition for subnormality of Hilbert space operators gives rise to the classes of $k$-hyponormal operators, $k = 1, 2, \cdots$. The Agler-Embry condition for subnormality of a contraction uses the $n$-contractive classes, $n = 1, 2, \cdots$. The comparative study of these classes has been fruitful: for example, if a contraction is $k$-hyponormal it is $2k$-contractive. We consider some back-step extensions of Agler model weighted shifts for which an $n$-contractivity condition guarantees (in some cases, is equivalent to) a $k$-hyponormality one. Elements of the study include the Berger measure of a subnormal shift and orthogonal polynomials.