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Composition Operators on the Newton Space

We investigate properties of composition operators C_ϕ on the Newton space (the Hilbert space of analytic functions which have the Newton polynomials as an orthonormal basis). We derive a formula for the entries of the matrix of C_ϕ with respect to the basis of Newton polynomials in terms of the value of the symbol ϕ at the non-negative integers. We also establish conditions on the symbol ϕ for boundedness, compactness, and self-adjointness of the induced composition operator C_ϕ . A key technique in obtaining these results is use of an isomorphism between the Newton space and the Hardy space via the Binomial Theorem.

(Joint work with Peter Rosenthal.)