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**Joseph A Ball\*** ([joball@math.vt.edu](mailto:joball@math.vt.edu)), Department of Mathematics, 225 Stanger Street, McBryde Hall, Blacksburg, VA 24061-0123. *Interpolation and transfer-function realization for the noncommutative Schur-Agler class.*

The Schur-Agler class consists of functions over a domain satisfying an appropriate von Neumann inequality. Originally defined over the polydisk, the idea has been extended to general domains in both commutative and noncommutative settings with polynomial defining function. More recently there has emerged a free noncommutative function theory (functions of noncommuting matrix variables respecting direct sums and similarity transformations). We discuss extensions of the Schur-Agler-class theory to the free noncommutative function setting. This includes the positive-kernel-decomposition characterization of the class, transfer-function realization and Pick interpolation theory. A special class of defining functions is identified for which the associated Schur-Agler class coincides with the contractive-multiplier class on an associated noncommutative reproducing kernel Hilbert space; in this case, solution of the Pick interpolation problem is in terms of the complete positivity of an associated Pick matrix which is explicitly determined from the interpolation data. The talk is based on joint work with Gregory Marx and Victor Vinnikov. (Received September 22, 2015)