1163-47-188 **Joseph A Ball*** (joball@math.vt.edu), Department of Mathematics, Virginia Tech, Blacksburg, VA 24061. *The Arveson extension theorem for completely positive noncommutative kernels.*

A *completely positive (cp) kernel* on Ω to $\mathcal{L}(\mathcal{A}, \mathcal{L}(\mathcal{Y}))$ (bounded linear operators from the C^*-algebra $\mathcal{A}$ to bounded linear operators on the Hilbert space $\mathcal{Y}$) in the sense of Barreto-Bhat-Liebscher-Skeide is a function $k \colon \Omega \times \Omega \to \mathcal{L}(\mathcal{A}, \mathcal{L}(\mathcal{Y}))$ satisfying a certain complete positivity condition. A *free noncommutative (nc) cp kernel* is a quantized version of the BBLS cp kernel, whereby one allows the point set to include matrices over the level-1 set of points Ω and demands that the kernel function satisfy natural compatibility relations with respect to intertwinings via complex scalar matrices of the matrix-point arguments. The notion of cp nc kernel contains that of cp map between C^*-algebras (or more generally operator systems) as a special case. We present a natural extension of the Arveson extension theorem for cp maps to the level of nc cp kernels. This is joint work with Gregory Marx and Victor Vinnikov. (Received August 25, 2020)