Jireh Loreaux* (loreaujy@mail.uc.edu), University of Cincinnati, Department of Mathematical Sciences, 2600 Clifton Ave, Cincinnati, OH 45221, and Gary Weiss. An infinite dimensional Schur-Horn Theorem for positive compact operators, the nonzero kernel case.

The classical Schur-Horn Theorem relates the eigenvalues of a self-adjoint $n \times n$ matrix to the set of possible diagonals of such a matrix with respect to different orthonormal bases. In particular, it states that the diagonal of a self-adjoint matrix is majorized by the eigenvalues (repeated according to multiplicity). Conversely, any sequence majorized by the eigenvalue sequence appears as the diagonal with respect to an appropriate basis.

We prove an infinite dimensional Schur-Horn theorem for positive compact operators with infinite dimensional kernel, one of the two open cases posed by V. Kaftal and G. Weiss. In their paper, Kaftal and Weiss characterized the diagonals of operators in the unitary orbit of a positive compact operator when either the operator is of finite rank or has zero kernel. Here we show how the characterization problem depends on the dimension of the kernel when its range projection is infinite. The key tools are new kinds of majorization which we call $p$-majorization and approximate $p$-majorization. (Received January 28, 2014)