1063-46-153 **Edward G. Effros*** (ege@math.ucla.edu), Mathemaics Department, UCLA, Los Angeles, CA 90095, and **Lieven Vandenberghe** (vandenbe@ee.ucla.edu), Electrical Engineering Department, UCLA, Los Angeles, CA 90095. *On the Wittstock-Schmitt matricial Riesz interpolation property, and matrix convex optimization.* Preliminary report.

Matrix ordered and normed versions of the Hahn-Banach theorem provide the underpinning of “quantized” functional analysis. These results were proved by Arveson in 1969, and extended by Wittstock in 1981. Although the classical Hahn-Banach theorem was concerned with extending scalar valued linear functions, other “injective” range spaces could be used. In the ordered case, the dual injective spaces are the L^∞ spaces, the crucial property being the lattice property of the ordering. In fact the usual extension one dimension at a time only requires the weaker Riesz interpolation property, a key notion in the Choquet theory of convexity. The problem of finding matrix versions of the interpolation property that would “explain” matrix order injectivity was explored by Choi and Effros in 1977, and a more detailed analysis was given by Wittstock and Schmitt in the mid 1980’s. Stimulated by the current interest in matricial orderings and corresponding tensor products and their applications in quantum information theory (e.g., Paulsen *et al*), we provide an elementary clarification of the Wittstock-Schmitt results based on methods of convex optimization. Other very recent and surprising developments in matrix convexity theory will also be mentioned. (Received August 14, 2010)