1154-VV-299 **Pan Shun Lau*** (`plau@unr.edu`). *Convexity and star-shapedness of joint matricial range.*

Let $\mathbf{A} = (A_1, \ldots, A_m)$ be an m-tuple of bounded linear operators acting on a Hilbert space $\mathcal{H}$. Their joint (p, q)-matricial range $\Lambda_{p,q}(\mathbf{A})$ is the collection of $(B_1, \ldots, B_m) \in \mathbf{M}_q^m$, where $I_p \otimes B_j$ is a compression of A_j on a pq-dimensional subspace. This definition covers various kinds of generalized numerical ranges for different values of p, q, m. In this talk, we will show that $\Lambda_{p,q}(\mathbf{A})$ is star-shaped if the dimension of $\mathcal{H}$ is sufficiently large. If $\dim \mathcal{H}$ is infinite, we consider the joint essential (p, q)-matricial range

$$\Lambda_{p,q}^{ess}(\mathbf{A}) = \bigcap \{\mathbf{cl}(\Lambda_{p,q}(A_1 + F_1, \ldots, A_m + F_m)) : F_1, \ldots, F_m \text{ are compact}\},$$

ans show that it is always non-empty, compact and convex. This is the joint work with Chi-Kwong Li, Yiu-Tung Poon, Nung-Sing Sze. (Received August 29, 2019)