

Why do circles in the spectrum matter?

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We present several results linking the joint numerical ranges of Hilbert space operator tuples to the circle structure of the spectrum of tuples. Our approach allows us to unify and/or essentially extend several results where the circular structure of the spectrum is crucial: Arveson's theorem on almost-wandering vectors of unitary actions, Brown-Chevreau-Pearcy's theorem on invariant subspaces of Hilbert space contractions and Hamdan's recent result on supports of Rajchman measures, to mention a few.

This is a recent joint work with Vladimir Müller (Prague).