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Spans and sums of unitary and similarity orbits of a single operator

(joint work with L.W. Marcoux)

If T is a bounded operator on a separable Hilbert space \mathcal{H} which is not of the form scalar plus compact, then every bounded linear operator on \mathcal{H} can be written as a linear combination of 14 or fewer operators unitarily equivalent to T , as a linear combination of 6 or fewer operators similar to T , and as a sum of 8 or fewer operators similar to T . When T is not polynomially compact, the set of all sums of 2 operators similar to T is dense in $\mathcal{B}(\mathcal{H})$, while if T is polynomially compact, but not of the form scalar plus compact, then the set of sums of 3 operators similar to T is dense in $\mathcal{B}(\mathcal{H})$.