Decay properties for functions of matrices over C^*-algebras

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We extend existing results on the off-diagonal decay of the entries of analytic functions of banded and sparse matrices to the case where the matrix entries are elements of a C^*-algebra. For instance, the matrix entries could be bounded linear operators on a Hilbert space or continuous complex-valued functions on a compact Hausdorff space. The main ingredients are classical approximation theory and the holomorphic functional calculus.

The case of quaternionic matrices will also be discussed, together with possible applications.