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A generalisation of Cayley identity to the case of (unbounded) operators in Hilbert spaces

In linear algebra, the Caley indentity states that $d_A(A) = 0$, where $d_A(z) = \det(A - zI)$ is the characteristic polynomial of a square matrix A. I will discuss how this result generalises to linear operators in a Hilbert space. In particular, I will explain that the Caley identity (which is understood in the weak sense) with an outer analytic function d_A serves as a criterion for a non-self-adjoint operator with purely singular spectrum to belong to the class of operators with almost Hermitian spectrum. Moreover, I will state the corresponding result for self-adjoint operators and discuss its localisation in the case where the said operator can have a non-trivial absolutely continuous subspace.