The quaternionic evolution operator for bounded and for unbounded operators

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1 Abstract

We introduce the possible formulations of the quaternionic functional calculus, we state its properties and we use them to study the quaternionic evolution operator. Moreover, we show that the Laplace transform of the quaternionic semigroup turns out to be the S-resolvent operator. Such an operator is the key tool to construct the quaternionic functional calculus and it plays the same role that the classical resolvent plays for the Riesz-Dunford functional calculus. We prove that the classical Hille-Phillips-Yosida result can be extended to the quaternionic setting.

This is a report on joint work with I. Sabadini.