Flows of algebras: classification in a rotational flow

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Abstract.

A flow of algebras (FA) is a continuous-time dynamical system in which each state is a finite-dimensional algebra determined by a cubic matrix of structural constants that satisfies a Kolmogorov-Chapman type equation (KCE).

We establish conditions on the multiplication of cubic matrices under which the KCE admits a solution, with particular attention to algebras of cubic matrices equipped with a fixed multiplication.

Drawing on ideas from continuous-time Markov processes, we construct a class of flows of algebras using the matrix exponential of cubic matrices.

In addition, we describe a time-dependent family of two-dimensional algebras and determine when algebras corresponding to different times are isomorphic.

References

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