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Alexey Ovchinnikov* (aiovchin@ncsu.edu), North Carolina State University, Department of Mathematics, Box 8205, Raleigh, NC 27695-8205. *Tannakian formalism for linear differential algebraic groups.*

Tannaka's Theorem states that a linear algebraic group G is determined by the category of finite dimensional G -modules and the forgetful functor. We extend this result to linear differential algebraic groups by introducing a category corresponding to their representations and discuss how this category determines such a group.

We also provide conditions for a category with a fiber functor to be equivalent to the category of representations of a linear differential algebraic group. This generalizes the notion of a neutral Tannakian category used to characterize the category of representations of a linear algebraic group. (Received February 23, 2007)