1099-13-191   **Alexey Ovchinnikov*** (`aovchinnikov@qc.cuny.edu`) and **Michael Wibmer**
(`michael.wibmer@matha.rwth-aachen.de`). *Tannakian categories with actions of semigroups.*

Ostrowski's theorem implies that $\log(x)$, $\log(x+1)$,... are algebraically independent over $\mathbb{C}(x)$. More generally, for a linear differential or difference equation, it is an important problem to find all algebraic dependencies among a non-zero solution y and particular transformations of y, such as derivatives of y with respect to parameters, shifts of the arguments, rescaling, etc. I will discuss a theory of Tannakian categories with semigroup actions, which could be used to attack such questions in full generality. Deligne studied actions of braid groups on categories and obtained a finite collection of axioms that characterizes such actions to apply it to various geometric constructions. In this talk, I will present a finite set of axioms that characterizes actions of semigroups that are finite free products of free finitely generated commutative semigroups on Tannakian categories. This is the class of semigroups that appear in many applications. (Received February 08, 2014)