

On a Recursive Nonstandard Model of Exponential Open Induction

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Abstract

We will report on a work in progress about the problem of the existence of a recursive nonstandard model of Exponential Open Induction ($\text{IO}(2^x)$). We show, in a series of applications of results of Wilkie, Macintyre, van den Dries, Speissegger, Marker, Ressayre, Rosenlicht and Dahn, that (complex) Schanuel's conjecture implies that there is a recursive nonstandard model of $\text{IO}(2^x)$. Also we will discuss how the limit behavior of the exponential terms in a recursive nonstandard model of $\text{IO}(2^x)$, in the spirit of Dahn, can relate to the Last Root Conjecture. We hope that a combination of this work with that of Boughattas on Exponential Open Induction, can lead to a recursive nonstandard model of even stronger theories than $\text{IO}(2^x)$, for instance $\text{IO}(2^x) + \text{GCD}$.