

1154-47-2308

Méric Augat* (maugat@wustl.edu). *Free Analysis and Free Rational Automorphisms*. Preliminary report.

Recent advances in *Free Analysis* have shown that an endomorphism φ of the free algebra $\mathbb{C}\langle x_1, \dots, x_g \rangle$ is an automorphism if and only if the induced polynomial mapping $p = (\varphi(x_1), \dots, \varphi(x_g))$ is injective on the set of all g -tuples of $n \times n$ matrices, taken over all n .

It is natural to try and find a similar condition for when an endomorphism of the free skew field (free division algebra) is an automorphism. In this talk we discuss the conjectured injectivity condition and the difficulties that arise in trying to prove it.

This talk is related to free analysis, realizations of nc rational functions, and invertibility in the tensor product of skew fields. (Received September 18, 2019)