

**Number theory and Representation
Theory seminar, Fall 2007
East Hall 4096
October 8, 3:10-5:00pm
(tea break at 4pm)**

Algebraic independence of values of the exponential function

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Abstract

Schanuel's conjecture states that any finite set of n \mathbb{Q} -linearly independent complex numbers together with their exponentials generate an extension of \mathbb{Q} with transcendence degree at least n . This covers known results such as the Lindemann-Weierstrass theorem and reasonable conjectures like the algebraic independence of \mathbb{Q} -linearly independent logarithms of algebraic numbers. In this talk we recall some of the main results concerning the algebraic independence of values of the exponential function. We also reformulate Schanuel's conjecture in the form of a conjecture small-value estimate for the algebraic group $G_a \times G_m$. We compare it to Philippon's criterion of algebraic independence, and conclude with recent small-value estimates for the 1-dimensional groups G_a and G_m .