On the algebraic K-theory of algebraic tori

Florian Riedel (Copenhagen)

I will describe work in progress joint with Bai, Carmeli and Juran. A classical computation by Quillen expresses the algebraic K-theory spectrum of the ring of Laurent polynomials as the group ring of S^1 over the K-theory of the base field. We generalize this by showing that the algebraic K-theory spectrum of a not-necessarily split algebraic torus is given by the group ring of the delooping of the character lattice of the torus, thus showing that a version of Cartier duality between algebraic and topological tori holds on the level of K-theory. We do this by constructing a motivic Fourier transform which is of independent interest and also recover an explicit formula of Merkujev-Panin for K_0 in a straightforward way.