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**INNA ZAKHAREVICH**, Cornell University

*A derived zeta-function*

Motivic measures can be thought of as homomorphisms out of the Grothendieck ring of varieties. Two well-known such measures are the Larsen–Lunts measure (over  $\mathbf{C}$ ) and the Hasse–Weil zeta function (over a finite field). In this talk we will show how to lift the Hasse–Weil zeta function to a map of  $K$ -theory spectra which restricts to the usual zeta function on  $K_0$ . As an application we will show that the Grothendieck spectrum contains nontrivial elements in the higher homotopy groups.