

Speaker : Jack Morava

Title : Motives via Waldhausen K -theory I & II

Abstract :

The techniques of K -theory have progressed to a stage where we can study both the algebra $C_0^*(\tilde{X})\langle\pi_1(X)\rangle$ and the ring-spectrum $\mathbb{S}[\Omega X]$ (associated to a reasonable space X with universal cover \tilde{X}) essentially simultaneously. At this level of abstraction it becomes natural to seek a category of generalized motives which encompasses constructions of both sorts (and which extends to a more intrinsically-defined class of noncommutative objects).

Using language of Toen and Vaquié we can think of such objects as living in a category enriched over

$$\mathrm{Spec} \mathbb{S} \times_{\mathbb{S}_1} \mathrm{Spec} \mathbb{F}_1 ,$$

ie with a homotopy-theoretic component generalizing the finite primes of number theory and an analytic component playing a similar role for the Archimedean places. Such objects have a natural cohomology theory, taking values in a category of sheaves over the stack of one-dimensional formal group laws, enriched at Archimedean infinity by Kapranov's stack $\mathbb{C}/\mathbb{C}^\times$.