1057-55-184 **Nicholas J. Kuhn*** (njk4x@virginia.edu), Mathematics Department, University of Virginia, Charlottesville, VA 22904-4137. *A polynomial functor approach to some equivariant K–theory algebras.* Preliminary report.

Given a finite complex X, we consider the graded abelian group

$$\mathcal{K}(X) = \bigoplus_{r=0} K_{\Sigma_r}(X^r).$$

This connects to various disparate things. On one hand, there is a natural map $\alpha : \mathcal{K}(X) \to K(\Omega^\infty \Sigma^\infty X)$ that can be viewed as a completion. On the other hand, Graeme Segal has observed that $\mathcal{K}(X) \otimes \mathbb{C}$ is the free Λ–ring generated by $K(X) \otimes \mathbb{C}$. Recently Joe Johnson has constructed a λ–ring structure on $\mathcal{K}(X)$ such that in the diagram

$$\mathcal{K}(X) \otimes \mathbb{C} \xleftarrow{i} \mathcal{K}(X) \xrightarrow{\alpha} K(\Omega^\infty \Sigma^\infty X)$$

both i and α are maps of Hopf algebras and Λ–rings.

I will briefly survey this, and then offer a global approach to $\mathcal{K}(X)$, inspired by observations in the 1970's by I. G. MacDonald.

Let $\mathrm{Vect}(X)$ be the category of complex vector bundles over X. We let $\mathcal{P}(X)$ be the category of polynomial functors $F : \mathrm{Vect}(X) \to \mathbb{C}$–vector spaces. This abelian category splits into its homogeneous components, and thus so does its K–theory.

Theorem $K(\mathcal{P}(X)) \simeq \mathcal{K}(X)$. (Received January 21, 2010)