1018-05-161 **Cristian P. Lenart*** (lenart@albany.edu), Department of Mathematics and Statistics, State University of New York at Albany, 1400 Washington Avenue, Albany, NY 12222, and **Toshiaki Maeno**. *Towards Schubert calculus in quantum K-theory.*

Schubert calculus evolved from the calculus of enumerative geometry to the study of algebraic, geometric, and combinatorial aspects related to various cohomology settings for algebraic homogeneous spaces. To a large extent, these settings refer to singular cohomology, K-theory, and quantum cohomology. We define and study quantum Grothendieck polynomials, which we conjecture to represent Schubert classes (i.e., the natural basis elements) in the quantum K-theory of the classical flag variety. There is strong evidence for this conjecture, whose proof is only lacking a certain geometric component. Many properties of the quantum Schubert polynomials of Fomin, Gelfand, and Postnikov are generalized to our quantum Grothendieck polynomials. For instance, we derive a Monk-type multiplication formula, and show that the factorization property of the cohomology quantization map generalizes. (Received March 04, 2006)