1023-58-1471 **Dmitry M Gerenrot*** (gerenrot@math.gatech.edu), Georgia Institute of Technology, School of Mathematics, 686 Cherry St., Atlanta, GA 30332. *Residue Formulation of the Chern Character on Smooth Manifolds.*

The Chern character of a complex vector bundle is most conveniently defined as the exponential of a curvature of a connection. It is well known that its cohomology class does not depend on the particular connection chosen. It has been shown by Quillen that a connection may be perturbed by an odd endomorphism of the vector bundle, such as a symbol of some elliptic differential operator, which produces a superconnection. This point of view, as we intend to show, allows one to relate Chern character to a non-commutative sibling formulated by Connes and Moscovici. The general setup for our problem is purely geometric. Let σ be the symbol of a Dirac-type operator acting on sections of a super-vector bundle E. Let ∇ be a connection on E, pulled back to T^*M. Suppose also that ∇ respects the grading. The object $\nabla + \sigma$ is a superconnection on T^*M in the sense of Quillen. We obtain a formula for the $H_*(M)$-valued Poincare dual of Quillen's Chern character $ch(D) = tr_s e^{(\nabla+\sigma)^2}$ in terms of residues of $\Gamma(z) tr_s(\nabla + \sigma)^{-2z}$. (Received September 26, 2006)