1047-14-398 **Parsa Bakhtary*** (`pbakhtar@math.purdue.edu`), 216 N. 4th St., Lafayette, IN 47901. *On the Cohomology of a Simple Normal Crossings Divisor and its Dual Complex.*

We establish a formula which decomposes the cohomologies of various sheaves on a simple normal crossings divisor (SNC) D in terms of the simplicial cohomologies of the dual complex $\Delta(D)$, constructed combinatorially using only incidence information of the components of D, with coefficients in a presheaf of vector spaces. This presheaf consists precisely of the corresponding cohomology data on the components of D and on their intersections. We use this formula to give a Hodge decomposition for SNC divisors and show how it simplifies in the toric setting. We also conjecture the existence of such a formula for effective non-reduced divisors with SNC support, and show that this would imply the vanishing of the higher simplicial cohomologies of the dual complex associated to the exceptional SNC divisor of a resolution of an isolated rational singularity. (Received February 02, 2009)