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**Title: Duality between Symmetric and Exterior algebra and its generalizations**

**Abstract:** First we plan to discuss the relationship between the polynomial algebra in  $N$  commuting variables, and the exterior algebra in  $N$  anticommuting variables, in particular a construction which converts the modules over the first algebra into modules over the second, and the other way around. Then we consider some generalizations to Lie algebras, complete intersections, etc. stating some recent results and open problems.

**Short Biography:** Vladimir Baranovsky received his Diploma in Mathematics in 1995 from Moscow State University. He then joined the University of Chicago, where he completed his PhD thesis in Mathematics (2000). After his postdoctoral studies at the California Institute of Technology (2000-2004) he joined in 2004 the Department of Mathematics at the University of California in Irvine. In 2006 he received Sloan Fellowship. His current research interests are in representation theory, vector bundles on algebraic varieties and their moduli spaces, toric varieties, and categories of modules over rings.