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Vlad Matei*, Department of Mathematics, University of California Irvine, Irvine, CA 92697. *A geometric approach to counting norms in cyclic extensions of function fields.*

We present an explicit version of a function field analogue of a classical result of Odoni about norms in number fields in the case of a cyclic Galois extensions. In the particular case of a quadratic extension, we recover the result of Bary-Soroker, Smilanski, and Wolf which deals with finding asymptotics for a function field version on sums of two squares, improved upon by Gorodetsky , and reproved by the author in his Ph.D thesis using the method of this paper. The main tool is a twisted Grothendieck Lefschetz trace formula, inspired by the work of Church, Farb and Ellenberg on representation stability and asymptotic for point counts on varieties. Using a combinatorial description of the cohomology we obtain a precise quantitative result which works in the $q^n \rightarrow \infty$ regime, and a new type of homological stability phenomena, which arises from the computation of certain inner products of representations. (Received March 03, 2020)