1145-11-2525   **Alison Beth Miller*** (`abmiller@math.harvard.edu`). *Asymptotic counting of* $\mathrm{Sp}_{2g}(\mathbb{Z})$-*orbits on quadratic forms.*

We use the geometry of numbers to give a weighted asymptotic count for the number of orbits of the symmetric square of the standard representation of $\mathrm{Sp}_{2g}(\mathbb{Z})$-. That is, we count binary $2g$-ic forms up to $\mathrm{Sp}_{2g}(\mathbb{Z})$–equvalence. Our results generalize the classical results of Gauss-Mertens-Siegel on binary quadratic forms, and they can also be generalized further to count integral orbits of the adjoint representation of any semisimple algebraic group.

We show that the number of positive definite orbits with invariants $\leq X$ is asymptotic to $X^{g(2g+1)}$, and give the analogous result weighted by regulators in the indefinite case. (Received September 25, 2018)