1116-VN-1873 **Jonathan Gerhard***, James Madison University. *Conjugacy classes in* $GSp_6(\mathbb{F}_q)$ *and an application to abelian varieties.* Preliminary report.

The finite matrix group $\mathrm{GSp}_{2n}(\mathbb{F}_q)$ is the subgroup of $\mathrm{GL}_{2n}(\mathbb{F}_q)$ consisting of matrices that preserve an antisymmetric bilinear form up to scalar multiple. In $\mathrm{GL}_{2n}(\mathbb{F}_q)$, the characteristic polynomial and some additional partition data completely determine a conjugacy class. However, in $\mathrm{GSp}_{2n}(\mathbb{F}_q)$, this is still not enough to uniquely identify a conjugacy class in every case. In $\mathrm{GSp}_6(\mathbb{F}_q)$, we use a parameterization of Shinoda (1980) to construct representatives of certain conjugacy classes and then determine the sizes of those conjugacy classes. As an application, inspired by work of Gekeler (2003) and Achter and Williams (2015), we share progress towards constructing a product formula related to class numbers of number fields of degree 6 and conjecturally to sizes of isogeny classes of abelian varieties of dimension 3. (Received September 21, 2015)