1027-20-40   **Jane Gilman*** (`gilman@andromeda.rutgers.edu`), Mathematics Department, Rutgers University, Newark, NJ 07102. *Canonical Forms for Conjugacy Classes of Prime Order Symplectic Matrices in* **Sp(2g, $\mathbb{Z}$).**

We solve the following problem: Let $\tilde{M}$ be a $2g \times 2g$ symplectic matrix of prime order with integer entries. Find a unique normal form for $\tilde{M}$, that is, a symplectic matrix, M whose entries are determined by its conjugacy invariants. This is equivalent to finding a unique normal form for the symplectic matrix representation of the conjugacy class of a prime order element of the mapping class group or equivalently for a prime order conformal automorphism of a Riemann surface. In previous work a matrix, $M_{\mathcal{A}}$, giving a normal form for the matrix representation of the action on a not-necessarily canonical homology basis was found together with the intersection matrix for that basis, $J_{\mathcal{A}}$. Here we give an algorithm to replace the pair $(M_{\mathcal{A}}, J_{\mathcal{A}})$ with the pair (M, J) where M is unique and J is the intersection matrix for a canonical homology basis. (Received February 03, 2007)