It follows from the last part of prop. 3.2.1 that, in this case, the number of odd characteristics in the fundamental sets is congruent to g mod 4. We will see that this is a general fact.

4.5.1 Proposition. *Let* $O(F)$ *be the number of odd characteristics in a fundamental set* F. *Then* $O(F) \equiv g\ (4)$. *Conversely, for any* $l \equiv g\ (4)$, *and* $l \leqslant 2g+2$, *there are fundamental sets* F *with* $O(F) = l$.

4.5.2 *Proof.* We may safely restrict ourselves to the case where the symplectic torsor is S_X with its standard basis X, and $F = \{A\} + (X \cup \{X\})$ where $A \subset X$ is of even order $|A| = 2k$ (cf. 4.3). Then, in F there are $2k$ characteristics corresponding to subsets of X with $2k-1$ elements, $2(g-k)+1$ characteristics with $2k+1$ elements, and 1 characteristic with $2(g-k)+1$ elements, namely the ones obtained adding A to respectively the characteristics of the form $\{s\}$ $(s \in A)$, $\{s\}$ $(s \notin A)$, X. When g is even the second and third types have the same parity; when g is odd the first and third types have the same parity. From these remarks, it is easy to see that the number of elements of the same parity in F and $X \cup \{X\}$ are congruent mod 4, and that with this only restriction, this number can be arbitrary for F by conveniently choosing A. The proposition follows from this and from what was said just before its statement.

4.5.3 In Coble [1], additional material on fundamental sets may be found.

REFERENCES

[1] Coble, A. An application of finite geometry to the characteristic theory of the odd and even theta functions. *Trans. A.M.S. 7* (1906), pp. 241-276.

[2] Fay, J. Theta functions on Riemann surfaces. *Lecture Notes in Mathematics, No. 352*, Springer Verlag (1973).

[3] Igusa, J. *Theta Functions.* Springer Verlag (1972).

[4] Mumford, D. On the equations defining Abelian varieties I. *Invent. Math. 1* (1966), pp. 287-354.

[5] —— Theta characteristics of an algebraic curve. *Ann. Scient. ENS 4* (1971), pp. 181-192.

[6] Weber, H. *Lehrbuch der algebra*, Band 2, Braunschweig (1896).

(Reçu le 20 février 1976)

Neantro Saavedra Rivano

Dept. de Matemática
Universidad Simón Bolívar
Apartado 5354
Caracas, Venezuela