1096-20-737 **Arturo Magidin*** (magidin@member.ams.org), Mathematics Department, 217 Maxim Doucet Hall, P.O. Box 41010, Lafayette, LA 70504-1010. *A proof that a 4-generated group of class 2 and prime exponent is either cyclic, extra-special, or capable, using algebraic geometry.*

A group $G$ is capable if $G \cong K/Z(K)$ for some $K$. It has long been known that nontrivial cyclic groups and extra-special $p$-groups of order greater than $p^3$ cannot be capable. The capability of groups of class 2 and prime exponent can be characterized in terms of certain subspaces and linear transformations between vector spaces over $\mathbb{F}_p$, and this set-up opens the door to other tools, in particular geometric tools, to enter the picture. In particular, we will show an argument using algebraic geometry to show that if $G$ is of class two and prime exponent, and $|G^{\mathrm{ab}}| \leq p^4$, then the nontrivial cyclic group and the extra-special group of order $p^5$ and exponent $p$ are in fact the only exceptions to capability. That is, such a group $G$ is either non-trivial cyclic, extra-special of order $p^5$, or capable. The proof includes joint work with David McKinnon (University of Waterloo). (Received September 09, 2013)