1090-51-51 **G. Eric Moorhouse** and **Tim Penttila*** (penttila@math.colostate.edu), Department of Mathematics, Colorado State University, Fort Collins, CO 80523. *Groups of projective planes with differing numbers of point and line orbits.*

An open problem, popularized by Peter Cameron in 1984 and 1994 (and attributed by him to Bill Kantor), concerning collineation groups of projective planes is solved. The origin of the problem lies in a 1941 result of Richard Brauer, rediscovered at least three times (by Peter Dembowski in 1958, Dan Hughes in 1957, and by Ernest Tilden Parker in 1957) that a collineation group of a *finite* projective plane has equally many orbits on points and on lines. All the known proofs require finiteness, so the problem raised by Cameron (and Kantor) is whether every collineation group of an infinite projective plane need have equally many orbits on points and on lines.

Counterexamples in the infinite case to a more general 1967 lemma of Richard Block that the number of orbits of an automorphism group of a finite 2-design on blocks is greater than or equal to the number of orbits of that group on points have been known since 1999 (due to Bridget Webb, Alan Camina and David Evans).

But, until now, that question for infinite projective planes has remained open. Here we settle that question in the negative, even for infinite *Desarguesian* projective planes. (Received February 05, 2013)