1104-16-3 **Julia Pevtsova***, julia@math.washington.edu. *Applications of Geometry to Modular Representation Theory.*

Modular representation theory studies representations of a finite group over a field of positive characteristic that divides the order of the group. The situation is very different from the more familiar case of representations over $\mathbb{C}$: modular representations need not be direct sums of irreducible representations. Except in a handful of cases, it is impossible to classify modular representations, making the theory "wild", even for a group of size 9! Modular representation theory, more broadly construed, includes the representation theory of numerous other algebraic objects, such as positive characteristic Lie algebras.

Associating geometric invariants living on an appropriate projective variety to modular representations allows one to give some structure to this wild territory and even parameterize naturally occurring classes of representations. We'll discuss the classical concept of support variety which has its roots in the seminal work of D. Quillen on group cohomology, as well as more recent developments which include local Jordan type and vector bundles associated to modular representations. Despite the general nature of the theory, many interesting phenomena occur even for the smallest examples of finite groups which will be used for illustration. (Received August 21, 2014)