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Emilie Dufresne and **Jack Jeffries*** (jeffries@math.utah.edu). *How many invariants are needed to separate orbits?*

The study of separating invariants is a new trend in invariant theory. A separating set for a finite group $G \leq \mathrm{GL}_n(K)$ is a set of invariants whose elements separate the orbits of G . Separating sets often exhibit better behavior than generating sets for the ring of invariants: for example, there always exist separating sets consisting of elements of degree no greater than $|G|$.

We consider the question of what the least cardinality of a separating set is for G . Our main result is a lower bound on this size that generalizes the classical result of Serre that if the ring of invariants is polynomial then the group action must be generated by (pseudo-)reflections and related results by Dufresne. We find these bounds to be sharp in a wide range of examples. (Received August 12, 2013)