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Well-behaved separating algebras

The study of separating invariants has become quite popular in the recent years. For finite groups, a separating algebra is a subalgebra which separates the orbits. In this talk, we prove that there can exist polynomial separating algebras only when the group is generated by reflections. We thus generalize the classical result of Serre that only reflection groups may have a polynomial ring of invariants. We also show that separating algebras can be complete intersection only when the groups is generated by bireflections. We end with results on the Cohen–Macaulay property of separating algebras.