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Separating invariants and finite reflection groups

The idea of separating invariants comes from the desire to distinguish the orbits of a group action on a finite dimensional vector space. Roughly speaking, a separating algebra is a subalgebra which distinguishes the orbits of a group action equally well as the whole ring of invariants. Separating algebras are often better behaved than the ring of invariants. In this talk we give necessary conditions for the existence of polynomial separating algebras (the “best” possible behavior).