Computing degree bounds for separating invariants of actions of finite groups

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The *separating Noether number* $\beta_{\text{sep}}(G)$ of the finite group G is the minimal positive integer d such that for any finite dimensional linear representation of the group, any two different orbits are separated by an invariant polynomial that has degree at most d.

Our goal is to calculate the exact value of $\beta_{\text{sep}}(G)$ for some specific groups G. We mention some results (computed by hand) including the case of small groups ($|G| < 32$), and non-abelian groups containing a cyclic subgroup of index 2. Then we discuss a computer algorithm that can be used to compute $\beta_{\text{sep}}(G)$ for groups of small order. If time admits, we also speak about the case of abelian groups. The talk is based on preprint [1].

References

[1] M. Domokos, B. Schefler, *The separating Noether number of small groups*, https://doi.org/10.48550/arXiv.2412.08621