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Visu Makam* (visu@umich.edu), 1960 Woodbury, Apt 4912, Ann Arbor, MI 48104, and **Harm Derksen**. *Algorithms for orbit closure separation for invariants and semi-invariants of matrices.*

For a rational representation V of a reductive group G , we are interested in giving efficient algorithms to detect if the orbit closures of two given points in V intersect. We give a polynomial time algorithm for the cases of matrix invariants and matrix semi-invariants in all characteristics. Moreover, when the orbit closures do not intersect, we provide an explicit separating invariant. This is joint work with Harm Derksen. (Received January 08, 2018)