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**Joseph M Landsberg\*** (jml@math.tamu.edu), Dept. of Mathematics, Mailstop 3368, Texas A&M University, College Station, TX 77843-3368. *Symmetries of tensors and the complexity of matrix multiplication.*

Ever since Strassen discovered in 1968 that the usual way we multiply matrices is not the most efficient one, there has been intensive research to determine just how efficiently matrices can be multiplied. I will describe new uses of algebraic geometry and representation theory in the search for complexity upper bounds. A byproduct will be a result about small orbits in spaces of tensors of interest in its own right. This is joint work with A. Conner, F. Gesmundo, E. Ventura and Y. Wang. (Received January 21, 2019)