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Isabelle Shankar* (isabelle_shankar@berkeley.edu), **Serkan Hosten** and **Alexander Heaton**. *Symmetry Adapted Gram Spectrahedra*.

Sum of squares (SOS) relaxations are often used to certify nonnegativity of polynomials and are equivalent to solving a semidefinite program (SDP). The feasible region of the SDP for a given polynomial is the Gram Spectrahedron. For symmetric polynomials, there are reductions to the problem size that can be done using tools from representation theory. In recent work with Serkan Hosten and Alexander Heaton, we investigate the geometric structure of the spectrahedra that arise in the study of symmetric SOS polynomials, the Symmetry Adapted PSD cone and the Symmetry Adapted Gram Spectrahedron. (Received August 19, 2020)