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Stefan Sremac* (ssremac@puc.edu), Department of Mathematics, Pacific Union College, 1 Angwin Ave., Angwin, CA 94508, and **Hugo J. Woerdeman** and **Henry Wolkowicz**. *Error Bounds and Singularity Degree in Semidefinite Programming*.

Optimization algorithms for semidefinite programs (SDPs) terminate at a ‘solution’ where the residual of the optimality conditions is sufficiently small. However, such proposed solutions have been known to be wildly inaccurate. The Euclidean distance from the ‘solution’ to the optimal set can be several orders of magnitude greater than the residual of the optimality conditions. Since the distance to the optimal set is generally unknown, such a discrepancy is very undesirable. In 2001, Jos Sturm introduced *singularity degree* as a way to explain this pathology. In particular, he showed that large singularity degree is a necessary property of SDPs that exhibit the pathology. In this presentation we show that, in some sense, large singularity degree is also a sufficient property for this type of poor convergence. (Received September 15, 2020)