1145-14-1364   **Grigoriy Blekherman***, Georgia Institute of Technology, 686 Cherry St NW, Atlanta, GA
30313. *Overview of SOS polynomials.*

Nonnegativity of polynomials and its relations with sums of squares are classical topics in real algebraic geometry. This area has a rich and distinguished mathematical history beginning with Hilbert's fundamental work, his 17th problem, and its solution by Artin. Work in this area involves a blend of ideas and techniques from algebraic geometry, convex geometry and optimization. Recently SOS algorithms and relaxations have found numerous applications in engineering and theoretical computer science. There is also an emergent understanding that the study of nonnegative and SOS polynomials on a variety is inextricably linked to classical topics in algebraic geometry and commutative algebra, such as minimal free resolutions. (Received September 21, 2018)