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Thomas R Cameron* (tcameron@collegeofidaho.edu). *On Descartes' rule of signs for matrix polynomials.*

Descartes' rule of signs, first described by René Descartes in 1637, provides an upper bound on the number of real positive roots of a polynomial scalar polynomial with real coefficients.

In this talk, we discuss a generalization of Descartes' rule of signs for matrix polynomials $P(\lambda)$ with Hermitian coefficients that are all either positive or negative definite. Specifically, we support our conjecture that the upper bound on the number of real positive eigenvalues $r(P)$ of such matrix polynomials satisfies

$$r(P) \leq ns(P) \quad \text{and} \quad r(P) \equiv ns(P) \pmod{2},$$

where $s(P)$ is the number of sign changes (alterations of positive and negative definite) between consecutive nonzero coefficients. (Received February 27, 2017)