Aaron Melman* (amelman@scu.edu). Generalizations of the Eneström-Kakeya theorem.

The Eneström-Kakeya theorem is an elegant theorem that establishes upper (and lower) bounds on the moduli of zeros of polynomials with positive coefficients. We show how it can be generalized and improved in a unifying way by relying on just two tools: appropriate polynomial multipliers and the generalization of an observation by Cauchy. In this way, we derive zero inclusion regions composed of one, two, three, or more smaller disks, rather than just the one disk obtained by the Eneström-Kakeya theorem. (Received August 29, 2018)