1009-33-48 **Lawrence A Fialkow*** (`fialkowl@newpaltz.edu`), Dept. of Computer Science, SUNY, New Paltz, NY 12561. *Can a minimal degree 6 cubature rule for the disk have all points inside?*

A traditional approach to cubature is to locate the nodes at common zeros of orthogonal polynomials. By contrast, we use positivity and extension properties of moment matrices to prove that a 10-node (minimal) cubature rule for planar measure on the closed unit disk D can have as many as 9 points in the disk, but cannot have all 10 points in D. In this approach, orthogonal polynomials emerge as a consequence of the matrix extension which produces the cubature rule. (Joint work with C. Easwaran and S. Petrovic) (Received July 28, 2005)