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Greg Knese* (geknese@math.wustl.edu), Washington University in St. Louis, One Brookings Drive, Campus Box 1146, Dept. of Mathematics, St. Louis, MO 63130. *Algebraic and analytic structure of stable polynomials*. Preliminary report.

Stable polynomials, those with no zeros on some specified set such as the bidisk, appear in many of areas of mathematics, yet many basic questions about them and associated rational functions with a stable polynomial in the denominator do not have an adequate theory to address them. For example, when is such a rational function in two variables in L^2 of the two-torus? It turns out that a blend of Hilbert space theory and algebraic curve theory can be used to answer this and other questions. The work also sheds light on the structure of rational inner functions on the bidisk. (Received September 08, 2014)