1070-30-311 **Brian J. Cole** (Brian_Cole@brown.edu), Department of Mathematics, Brown University, Providence, Rhode Island 02912, U.S.A.. *A non-semialgebraic interpolation body.* Preliminary report.

Let A be a uniform algebra on a set X, and fix distinct points $\zeta_1, \ldots, \zeta_n$ in X. The associated *interpolation body* is the set

$$E = \{ (z_1, \ldots, z_n) \in \mathbf{C}^n \,\big|\, \forall \epsilon > 0 \ \exists f \in A, \ \|f\| < 1 + \epsilon, \ f(\zeta_i) = z_i, \ i = 1, \ldots, n \}.$$

Note that E is a compact, convex subset of $\mathbf{C}^n$. As a special case, consider $X = \Omega$, a complex manifold, and $A = H^\infty(\Omega)$. Pick's theorem describes E in terms of algebraic inequalities when Ω is the unit disk in $\mathbf{C}$, and hence E is a semialgebraic set in this case. More generally, it is known that E is semialgebraic when Ω is the unit bi-disk in $\mathbf{C}^2$ or a finite Riemann surface. In the negative direction, we prove the following

Theorem. *There exists an interpolation body E for a uniform algebra so that E is not semialgebraic.* (Received February 15, 2011)