1056-12-688 **Ha N Nguyen*** (`hnnguye@emory.edu`), 1506 Tuxworth Cir, Decatur, GA 30033, and **Victoria Powers** (`vicki@mathcs.emory.edu`), 400 Dowman Dr., W401, Atlanta, GA 30322.
Representations of polynomials non-negative on non-compact subsets of $\mathbb{R}^2$.

Recently, M. Marshall settled a long-standing question in real algebraic geometry by showing that if $f(x,y) \in \mathbb{R}[x,y]$ and $f(x,y) \geq 0$ on the strip $[0,1] \times \mathbb{R}$, then f has a representation $f = \sigma_0 + \sigma_1 x(1-x)$, where $\sigma_0, \sigma_1 \in \mathbb{R}[x,y]$ are sums of squares.

In this talk, we give the background to this result, which goes back to Hilbert's 17th problem, and our generalizations to other non-compact subsets of $\mathbb{R}^2$. (Received September 15, 2009)