1096-VM-362 **Timothy C Melvin*** (tmelvin@carroll.edu), Tim Melvin, 1601 N Benton Ave, Mathematics Department, Helena, MT 59625. *Spectrally Arbitrary Patterns and Algebraic Solutions.*

We say that an $n \times n$ zero-nonzero matrix pattern $\mathbb{A}$ is spectrally arbitrary over the field $\mathbb{F}$ if for every monic, n-degree polynomial $p(t)$ with coefficients from $\mathbb{F}$, there exists a matrix A over $\mathbb{F}$ with zero-nonzero pattern $\mathbb{A}$ such that the characteristic polynomial of A is $p(t)$. We will use Hilbert's Nullstellensatz to show that if a pattern is spectrally arbitrary over $\mathbb{C}$, then it is also spectrally arbitrary over $\overline{\mathbb{Q}}$, the algebraic closure of $\mathbb{Q}$. More generally, this result shows that if any system of multivariate polynomials with algebraic coefficients has a common zero, then there will be a common zero whose components are all algebraic. (Received August 30, 2013)