1128-15-60 **Jillian Louise Glassett*** (jglassett@math.wsu.edu), jglassett@math.wsu.edu, and **Judith McDonald**. *Spectrally Arbitrary Zero-Nonzero Patterns over Rings with Unity.*

A zero-nonzero matrix pattern $\mathcal{A}$ is a square matrix with entries $\{0, *\}$. A $n \times n$ pattern $\mathcal{A}$ is spectrally arbitrary over a ring $\mathcal{R}$ if for each n-th degree monic polynomial $f(x) \in \mathcal{R}[x]$, there exist a matrix A over $\mathcal{R}$ with pattern $\mathcal{A}$ such that the characteristic polynomial $p_A(x) = f(x)$. A $n \times n$ pattern $\mathcal{A}$ is relaxed spectrally arbitrary over $\mathcal{R}$ if for each n-th degree monic polynomial $f(x) \in \mathcal{R}[x]$, there exist a matrix A over $\mathcal{R}$ with either pattern $\mathcal{A}$ or a subpattern of $\mathcal{A}$ such that the characteristic polynomial $p_A(x) = f(x)$. We consider whether a pattern $\mathcal{A}$ that is spectrally arbitrary over a ring $\mathcal{R}$ is spectrally arbitrary or relaxed spectrally arbitrary over another ring $\mathcal{S}$. In particular, we discovered that a pattern that is spectrally arbitrary over $\mathbb{Z}$ is relaxed spectrally arbitrary over $\mathbb{Z}_m$ for all m. We also determined the minimum number of $*$ entries to be spectrally arbitrary over $\mathbb{Z}$. (Received February 22, 2017)