1077-15-137 **Natalie Campbell** and **Kevin N. Vander Meulen*** (kvanderm@redeemer.ca), Department of Mathematics, Redeemer University College, 777 Garner Road, Ancaster, Ontario L9K 1J4, Canada, and **Adam van Tuyl**. *Nilpotent and spectrally arbitrary matrix patterns over* $\mathbb{C}$.

A zero-nonzero matrix pattern $\mathcal{A}$ is said to be potentially nilpotent over a field $\mathbb{F}$ if there exists a nilpotent matrix with entries in $\mathbb{F}$ having zero-nonzero pattern $\mathcal{A}$. We present classes of patterns which are potentially nilpotent over a field $\mathbb{F}$ if and only if $\mathbb{F}$ contains certain roots of unity. We then introduce some sparse patterns of order $n \geq 4$ which are spectrally arbitrary over $\mathbb{C}$ but not over $\mathbb{R}$. (A pattern $\mathbb{A}$ of order n is said to be a spectrally arbitrary pattern over $\mathbb{F}$ if for every degree n monic polynomial p with coefficients in $\mathbb{F}$, there is a matrix with pattern $\mathcal{A}$ whose characteristic polynomial equals p.) We employ a slight modification of the nilpotent-Jacobian method. (Received July 30, 2011)