1077-15-908 **Pauline van den Driessche*** (pvdd@math.uvic.ca). *Refined Inertia of Sign Pattern Matrices.* Preliminary report.

The refined inertia of a real $n \times n$ matrix $A = [a_{ij}]$ is the ordered 4-tuple of nonnegative integers $(n_+, n_-, n_z, 2n_p)$ where n_+ (resp. n_-) is the number of eigenvalues with positive (resp. negative) real part, and n_z (resp. $2n_p$) is the number of zero eigenvalues (resp. nonzero pure imaginary eigenvalues) of A. Associated with A is the $n \times n$ sign pattern matrix $\mathcal{S}_n = [s_{ij}]$ with $s_{ij} = sign(a_{ij})$, which in turn defines a sign pattern class $Q(\mathcal{S}_n)$ of matrices and an associated signed directed graph. A sign pattern $\mathcal{S}_n$ has refined inertia $(n_+, n_-, n_z, 2n_p)$ if there exists $A \in Q(\mathcal{S}_n)$ with this refined inertia. This talk discusses sign patterns that require or allow certain refined inertias, including those related to bifurcations in ordinary differential equation systems. (Received September 14, 2011)