Pauline van den Driessche* (pvdd@math.uvic.ca). Refined inertias of strongly connected orientations of the Petersen graph.

The 18 non-isomorphic strongly connected orientations of the Petersen graph give rise to matrix patterns in which nonzero entries can be taken to be strictly positive, of arbitrary sign, or of fixed sign. The allowed refined inertias, in which the number of zero eigenvalues are split from others on the imaginary axis, are considered for some of these matrix patterns to illustrate the following results. Each nonnegative pattern has unique refined inertia determined by the number of required zero eigenvalues. For zero-nonzero patterns, the allowed refined inertias are determined for each orientation. One particular sign pattern allows only two distinct refined inertias out of a possible 161 for a sign pattern of order 10. [Joint work with G.J. Culos and D.D. Olesky] (Received August 16, 2016)