1145-01-2148   **John M Neuberger**, **Nandor Sieben*** (`nandor.sieben@nau.edu`) and **James W Swift**.

Synchrony And Anti-Synchrony For Difference-Coupled Vector Fields On Graph Network Systems.

We define a graph network to be a coupled cell network where there are only one type of cell and one type of symmetric coupling between the cells. For a difference-coupled vector field on a graph network system, all the cells have the same internal dynamics, and the coupling between cells is identical, symmetric, and depends only on the difference of the states of the interacting cells. We define four nested sets of difference-coupled vector fields by adding further restrictions on the internal dynamics and the coupling functions. These restrictions require that these functions preserve zero or are odd or linear. We characterize the synchrony and anti-synchrony subspaces with respect to these four subsets of admissible vector fields. Synchrony and anti-synchrony subspaces are determined by partitions and matched partitions of the cells that satisfy certain balance conditions. We compute the lattice of synchrony and anti-synchrony subspaces for several graph networks. (Received September 24, 2018)