1145-34-1725   **Krishna P Pokharel*** (`kpokhar@rockets.utoledo.edu`). *An Isospectral Flow on Banded Matrices.*

In this talk, we discuss an isospectral flow in the space of matrices, which deforms any given real banded matrix with simple real spectrum to a symmetric matrix. The Lax flow is given by

$$\frac{dA}{dt} = [[A^T, A]_{du}, A],$$

where brackets indicate the usual matrix commutator, $[A, B] = AB - BA$, A^T is the transpose of A and the matrix $[A^T, A]_{du}$ is the matrix equal to $[A^T, A]$ along diagonal and upper triangular entries and zero below diagonal. We prove that if the initial condition A_0 is banded matrix with lower bandwidth $p = 2$ and upper bandwidth $q = 0$ with simple real spectrum and second subdiagonal elements different from zero, then $\lim_{t \to \infty} A(t)$ exists, it is a pentadiagonal symmetric matrix isospectral to A_0 and it has the same sign pattern in the second subdiagonal elements as the initial condition A_0. We provide some simulation results to highlight some aspects of this nonlinear system. (Received September 24, 2018)

1