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**KRIS VASUDEVAN**, University of Calgary

*Graph theory applications: Earthquake sequencing, epileptic seizures*

Graph theory is extensively used to study the dynamical behavior of complex networks depicting naturally occurring processes such as earthquakes, epileptic seizures and complex cell reactions. Here, we show how we construct the graphs for earthquake and epileptic seizure studies. Then, we present new spectral graph theory measures in the sense of the Laplacian spectrum of directed graphs. We also explore possible relationships between the results of the dynamics of oscillations and the spectral graph properties. Finally, we consider the dynamics of evolving directed graphs in terms of rewiring of vertices at regular intervals.

\* Work done with Michael Cavers