1163-37-1426 **Suddhasattwa Das*** (iamsuddhasattwa@gmail.com), 205 21st Street, Apt 2, Brooklyn, NY 11232, and **Dimitrios Giannakis** and **Joanna Slawinska**. *The spectral measure of a dynamical system.*

Many dynamical systems are described by a flow Φ^t on an ambient manifold M. Instead of the trajectories of this flow, the operator theoretic framework studies the dynamics induced on the space of observables. This gives rise to a unitary group U^t called the Koopman group. It describes the time-evolution of measurements, such as the state-space variables of an ODE. Many problems in theoretical and applied dynamics can be restated in terms of the Koopman group. A fundamental notion for such groups is that of a spectral measure, which is an operator valued, Borel measure on the complex plane. The spectral measure completely characterizes U^t and hence the trajectories of the flow. I will discuss many diverse ways in which the spectral measure manifests itself analysis of data generated by the dynamical system, such as spectral analysis, decay of correlations, periodic approximation of dynamical systems, and visibly as coherent spatiotemporal patterns. Each of these topics are of great interest of their own, and thus an accurate determination and computation of the spectral measure is of great value. I will finally describe a data-driven means of approximating the spectral measure, which relies on a number of tools from functional analysis. (Received September 15, 2020)