1128-49-32   **Humberto C Godinez*** (`hgodinez@lanl.gov`), Applied Mathematics and Plasma Physics, Mail Stop B284, Los Alamos, NM 87545, and **Nicholas W Hengartner** (`nickh@lanl.gov`), Mail Stop K710, Los Alamos, NM 87545. *Mode Reduction Methods for Data Assimilation: Subspace Projection using Koopman Operators.*

Data assimilation are methods that fuse observational data into model to improve the model forecast. These methods are widely used in several areas of science, including weather forecasting, hurricane forecasting, space weather, and subsurface flow, to name a few.

In order to reduce the computational burden of assimilating data into large-scale systems, spectral decomposition methods are used to to define a subspace that reduces the dimension of the problem. In this talk we use a recent decomposition technique based on the Koopman operator and present how it applied to data assimilation methods. We will derive an approximation to the eigenfunctions defined by the Koopman operator that represent the non-linear behavior of a dynamical system. (Received January 27, 2017)