1151-65-275   **Victor Ginting*** (`vginting@uwyo.edu`). *On the application of data-driven basis representation for approximating statistics in flow and transport in subsurfaces.* Preliminary report.

In this talk, I will present a numerical investigation of a data-driven basis representation for approximating statistics of flow and transport in subsurface formation. The main quantity of interests (QoIs) are fluid pressure, velocity, and concentration. In the presence of uncertainty of parameters in the model (such as permeability field), typical approach to calculate the statistics of the QoIs is to run Monte Carlo technique, where sample of the parameters from a certain distribution is fed to the simulation model. This approach can be very expensive especially when there is a need to calculate statistics for many different scenario. A viable alternative is to represent the effects of uncertainty in the QoIs by a set of basis gathered from a correlation structure that is constructed from available data. Construction of the basis is done only once and can be used for different scenario thereby avoiding the Monte Carlo technique. (Received August 20, 2019)