

## Spring 2017 Seminar Series

### MODEL ORDER REDUCTION OF IEEE 123 NODE TEST FEEDER USING KRYLOV SUBSPACE TECHNIQUES

Modeling and simulation of distribution system transients often requires the evaluation of model representations with hundreds of state variables. Therefore, model order reduction techniques have been developed to simplify and minimize the time needed for analyzing distribution systems. In this work, the implementation in MATLAB™ of the block Krylov-subspace based model reduction technique is presented. Krylov-subspace based methods belong to the group of moment matching techniques. The main idea is to create a smaller basis for matching the moments of the system around a selected point and to project the original system onto this smaller basis. The model order reduction technique is applied to a modified IEEE 123 node test feeder. The original model is compared to three reduced models of order 30, 24 and 12. The model error is evaluated in terms of frequency response to evaluate the accuracy of the Krylov-subspace results.

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