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**Guannan Zhang\*** (zhangg@ornl.gov) and **Lin Mu**. *A domain-decomposition model reduction technique for convection-dominated PDEs with random velocity fields.*

We developed a new model-order reduction technique for PDEs with random field input. In our approach, domain decomposition is used to reduce the parametric dimension in local physical domains; proper orthogonal decomposition is used to reduce the degree of freedom along the interfaces and within subdomains, and sparse approximation is used to construct surrogate to the local stiffness matrices obtained from Schur complement. The main advantages of our method are: (i) the complexity of the surrogate model is independent the FEM mesh size (online-offline decomposition); (ii) being able to handle both colored noise and discrete white noise (i.e., piecewise constant random fields); and (iii) promising accuracy in solving convection-dominated transport with random velocity fields. (Received January 23, 2019)