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Marcus Sarkis* (msarkis@wpi.edu) and **Juan Galvis**. *Approximating a SPDE with a coefficient with infinity number of scales.*

In this talk we consider a stochastic Darcy's pressure equation with log-normal permeability and random right-hand side forcing term. To accommodate the lack of ellipticity, singular forcing terms, and general representations of the permeability stochastic fields, we introduce continuous and discrete weak formulations involving distinct spaces for the solution and the test functions. We present inf-sup conditions, well-posedness, a priori error estimations and numerical experiments. This is joint work with Dr. Juan Galvis (Texas AM). (Received March 03, 2009)