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**Reduced Basis Approximation for the Sparse Grid
Stochastic Collocation Method**

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The sparse grid stochastic collocation method is widely used for solving PDEs with random coefficients. However, when the probability space has a high dimensionality, the number of sparse grids can be large. It then becomes very inefficient to construct the collocation solution by directly solving the fully discretized problems, associated with stochastic realizations at all sampling points. In order to speed up the collocation process, we apply a reduced basis approximation with a greedy algorithm, which can lead to Galerkin equations with very small degrees of freedom. Numerical experiments demonstrate the satisfactory performance of this model reduction technique.