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Christopher Beattie* (beattie@vt.edu), Department of Mathematics, Virginia Tech,
Blacksburg, VA 24061. *Optimal Interpolatory Model Reduction of Parameterized and Stochastic
Systems.*

We develop interpolatory model reduction methods for parameterized linear dynamical systems allowing the parametric dependence of the original system to be reproduced in the reduced order model. Interpolation is guaranteed both respect to selected complex frequencies and selected parameter value choices. We describe optimal parameter selection strategies that will produce \mathcal{H}_2 -optimal reduced order systems that also minimize a least squares error measure over the parameter range and discuss consequences for stochastic models. (Received January 26, 2010)