Interpolation and Model Order Reduction for parametric systems

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Model Order Reduction (MOR) Methods for linear systems are well studied and many successful methods exist. We will review the $\mathcal{H}_2$ optimal MOR and explain some recent advances in Parametric Model Order Reduction. The focus will be on a method where we interpolate the poles of the reduced order model by Radial Basis Function Interpolation. What this means is that the function we want to interpolate are eigenvalues of matrices depending on parameters. This can mean a variety of non nice behaviour in theory. It doesn't actually show up very frequently in practice but we will still show a way how to deal with it. We will furthermore need to introduce a technique to create a medium size model for computational efficiency.