

### **Abstract**

The major contribution of this thesis is a new thick-restarted Krylov method that allows for re-starting the process at different interpolation-points while preserving moment-matching and providing a controllable degree of linear-dependence of the resulting basis. It reduces computational-cost by recycling a controllable number of vectors per cycle. The algorithms comprising the method are outlined and their efficiency is demonstrated by applying it to selected test-models.