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★**Krylov subspace methods.**
Principles and analysis.
Numerical Mathematics and Scientific Computation.
Oxford University Press, Oxford, 2013. *xvi*+391 *pp. ISBN* 978-0-19-965541-0

Liesen and Strakoš have written a very good graduate level textbook on the analysis of Krylov subspace methods. The book presents mainly mathematical analysis rather than a basic-level introduction to Krylov subspace methods. However, the first main chapter of the book (Chapter 2) contains a clear and comprehensive discussion of the ideas behind Krylov subspace methods and their mathematical characterisation and derivation. This chapter showcases the main relevant Krylov subspace methods for linear systems and presents the basic algorithms. The derivations here (and in the later chapters) are all self-contained.

Chapter 3 takes a slightly different point of view on Krylov subspace methods. Krylov methods lead to smaller projected systems to be solved and hence can be interpreted as model order reduction methods. This chapter links Krylov methods to moment matching model order reduction.

Chapter 4 is dedicated to short recurrences for generating orthogonal Krylov subspaces, which occur naturally for Hermitian systems but not for non-Hermitian matrices.

Finally, Chapter 5 presents issues related to the computational cost of Krylov subspace methods. These are, for example, the concept of convergence of Krylov subspace methods (in particular the CG and GMRES methods), rounding error and backward stability analysis.

A very important and nice feature of the book in general is its references to original sources and historical notes, putting the methods and ideas behind Krylov subspace methods into context.

The book is well organised and clearly written, and its strengths are the mathematical analysis and the principles behind Krylov subspace methods (rather than the algorithmic or "matrix computation" point of view). There is an extensive list of almost 700 references. The monograph should be a valuable resource for advanced undergraduate and graduate students as well as experienced researchers in mathematics, computer science and engineering.

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