BACKGROUND READING FOR BEGINNERS

Here we list general references suitable for non-specialists who wish to learn more about algebraic combinatorics in general, or Kostka polynomials in particular.

1. General Background Books in Algebraic Combinatorics

(1) Lynne Butler, *Subgroup lattices and symmetric functions*. Mem. Amer. Math. Soc. 112 (1994), no. 539, vi+160 pp.
NO ANNOTATION AVAILABLE YET.

(2) William Fulton, *Young Tableaux*. Cambridge University Press, 1996.
This book contains a thorough discussion of the algebra and combinatorics of Young tableaux. Part 1 of the book discusses fundamental combinatorial tableaux constructions including bumping (RSK insertion), sliding (jeu-de-taquin), RSK correspondences, Schur functions, and the Littlewood-Richardson rule. Part 2 shows how tableaux arise in the representation theory of symmetric groups and general linear groups. Part 3 discusses the role of tableaux in the geometry of Grassmannians and flag manifolds. As one proceeds from Part 1 to Part 2 to Part 3, the difficulty level of the book increases quite substantially. Part 1 is self-contained (no prerequisites), but the same cannot be said for parts 2 and 3.

(3) Ian Macdonald, *Symmetric Functions and Hall Polynomials* (second edition). Oxford University Press, 1995.
This book is the standard encylopedic reference for symmetric functions, Hall-Littlewood polynomials, and Macdonald polynomials. Macdonald's viewpoint is highly algebraic, definitely NOT combinatorial, which may make the book tough reading for more combinatorial-minded readers. A huge amount of information from the literature is presented in the form of long exercises at the end of each section (called "examples" by Macdonald). I would hesitate to recommend this book as initial reading for beginners (e.g. graduate students). Read Sagan, Fulton, and Stanley first instead.

(4) Bruce Sagan, *The Symmetric Group: Representations, Combinatorial Algorithms, and Symmetric Functions* (second edition). Springer, 2001.
This book is a highly readable introduction to the representation theory of symmetric groups, combinatorial algorithms on tableaux such as the RSK algorithm, and symmetric functions. Technical prerequisites are minimal — one only needs to know standard group theory and linear algebra.

(5) Richard Stanley, *Enumerative Combinatorics* (2 volumes). Cambridge University Press.

This is the standard encyclopedic reference for enumerative combinatorics. Chapter 7 of Volume 2 (and the appendix) also contains a good deal of algebraic combinatorics and information about symmetric functions.

2. Survey Articles relevant to the Kostka Workshop

(1) Adriano Garsia and Jeff Remmel, "Breakthroughs in the theory of Macdonald polynomials," *Proc. Natl. Acad. Sci. USA* **102** # 11 (2005), 3891—3894.

This is a nice survey article that gives a lot of historical background on Schur functions, Hall-Littlewood polynomials, and Macdonald polynomials.

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