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Derived functors and sheaf cohomology. (English) [Zbl 07142443](#)

Contemporary Mathematics and Its Applications: Monographs, Expositions and Lecture Notes 2. Hackensack, NJ: World Scientific (ISBN 978-981-12-0728-0/hbk; 978-981-12-0730-3/ebook). xiii, 199 p. (2020).

This book is intended to be a good introduction to derived functors. A synopsis of the book goes as follows. Chapter 1 reviews category theory and homological algebra. Chapter 2 introduces derived functors. Chapter 3 is a rather self-contained introduction to presheaves and sheaves from a genuinely topological viewpoint. Chapter 4 addresses two cohomology theories, namely, Čech cohomology and sheaf cohomology, which are shown to be equivalent for paracompact spaces and quasi-coherent sheaves on noetherian separated schemes. Chapter 5 is concerned with spectral sequences, following the lines of *W. S. Massey* [*Ann. Math. (2)* 56, 363–396 (1953; [Zbl 0049.24002](#))], being concerned mostly with first quadrant spectral sequences. Chapter 6 is a brief introduction to derived categories.

Reviewer: [Hirokazu Nishimura \(Tsukuba\)](#)

MSC:

- 18-01 Introductory exposition (textbooks, tutorial papers, etc.) pertaining to category theory
- 14-01 Introductory exposition (textbooks, tutorial papers, etc.) pertaining to algebraic geometry
- 18Gxx Homological algebra in category theory, derived categories and functors
- 18F20 Presheaves and sheaves, stacks, descent conditions (category-theoretic aspects)

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