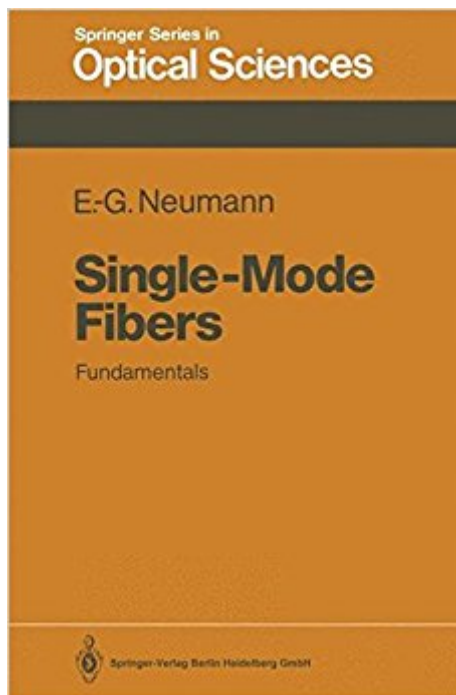


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# Single-Mode Fibers: Fundamentals (Springer Series In Optical Sciences) (Volume 57)



## Synopsis

Single-mode fibers are the most advanced means of transmitting information, since they provide extremely low attenuation and very high bandwidths. At present, long distance communication by single-mode fibers is cheaper than by conventional copper cables, and in the future single-mode fibers will also be used in the subscriber loop. Since single-mode fibers have many applications, a variety of people need to understand this modern transmission medium. However, waveguiding in single-mode fibers is much more difficult to understand than waveguiding in copper lines. A single-mode fiber is a dielectric waveguide operated at optical wavelengths. Since 1961, I have been involved in experimental and theoretical research on dielectric rod waveguides in the microwave region. From the experiments, I learned much about the properties of a wave guided by a dielectric rod or a glass fiber, especially about its behavior at waveguide discontinuities like bends, gaps, or the waveguide end. Since 1972, my co-workers and I have also been investigating dielectric waveguides at optical frequencies, and since 1973 I have lectured on "Optical Communications". These activities have shown that there is a need for a tutorial introduction to the new technical field of single-mode fibers. In this book the physical fundamentals are emphasized and the mathematics is limited to the absolutely necessary subjects. Besides presenting a physical explanation of waveguiding in single-mode fibers, it is also the aim of this book to give an overview of the knowledge accumulated in this field.

## Book Information

Series: Springer Series in Optical Sciences (Book 57)

Paperback: 533 pages

Publisher: Springer; Softcover reprint of the original 1st ed. 1988 edition (March 14, 2013)

Language: English

ISBN-10: 3662136996

ISBN-13: 978-3662136997

Product Dimensions: 6.1 x 1.2 x 9.2 inches

Shipping Weight: 1.8 pounds (View shipping rates and policies)

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Best Sellers Rank: #1,892,196 in Books (See Top 100 in Books) #71 in Books > Engineering & Transportation > Engineering > Electrical & Electronics > Fiber Optics #342 in Books > Science & Math > Physics > Light #760 in Books > Science & Math > Physics > Optics

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