



**Per-Simon Kildal** is a professor at Chalmers University of Technology in Gothenburg, Sweden. He has several patents on antenna designs that have been commercialized. He is the inventor of the reverberation chamber used for measuring performance of wireless devices in multipath, commercialized in Bluetest AB. His latest invention is called GAP waveguides; a millimeter-wave technology very useful for electronic packaging. He earned two doctoral degrees from Norwegian Institute of Technology in Trondheim.

## Foundations of Antenna Engineering: A Unified Approach for Line-of-Sight and Multipath

This is the first resource that contains a holistic treatment of traditional antennas mounted on masts (Line-of-Sight antenna systems), as well as small antennas used on modern wireless devices such as smart phones being subject to signal variations (fading) due to multipath propagation. The focus is on characterization, as well as describing classical antennas by modern complex vector theory -- Thereby linking together many disciplines such as electromagnetic theory, classical antenna theory, wave propagation, and antenna system performance. Overall, the book represents a rethinking of the way basic antenna theory is presented.

A MATLAB handbook accompanies this book, made available at [www.kildal.se](http://www.kildal.se). This can be used to provide initial antenna designs before entering into time-consuming numerical simulations.

*"This is one of the most comprehensive works on antennas, as well as on propagation, from a design viewpoint. It has its own unique and refreshing ways to present the complex subjects."* - Professor Raj Mittra, EMC Lab, Penn State and Central Florida Universities

*"I do not know any antenna book that covers theory and system engineering so concisely. The book is a MUST."* - Professor Werner Wiesbeck, Karlsruhe Institute of Technology, Germany.

*"I have used the previous edition in my classroom for several years. The book introduces novel concepts that tie traditional theories to modern technology. The defined Rich Isotropic Multipath (RIMP) environment makes it easier to understand MIMO technology."* - Prof. Ahmed A. Kishk, Concordia University, Montreal.

**Contents Overview:** Introduction, History, and Terminology; Characterization of Directive Antennas; Characterization in Multipath; Theory of Radiation from Current Sources; Small Wire and Slot Antennas; Microstrip Antennas and Spectral Domain Methods; Radiation from Apertures; Horn Antennas; Reflector Antennas; Array Antennas; Fundamental Limitations; Appendices.

Prof. Stefano Maci at University of Siena, Director of European School of Antennas, has written comments to all chapters, including extensive reference lists.



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