



# Radiation Heat Transfer: A Statistical Approach

*By J. Robert Mahan*

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## **Radiation Heat Transfer: A Statistical Approach** By J. Robert Mahan

Thermal radiation plays a critical role in our everyday lives, from heating our homes and offices to controlling the temperature of the earth's atmosphere. Radiation Heat Transfer presents a comprehensive foundation in the basics of radiative heat transfer with focused coverage of practical applications. This versatile book is designed for a two-semester course, but can accommodate one-semester courses emphasizing either traditional methods of radiation heat transfer or a statistical formulation, specifically the Monte Carlo ray-trace (MCRT) method.

Radiation Heat Transfer enables the uninitiated reader to formulate accurate models of advanced radiative systems without neglecting the complexity of the systems. The traditional methods covered here, including the net-exchange formulation, are mainstays in the industry. Also included is a step-by-step presentation of the more modern and technically accurate MCRT method, which has become increasingly relevant with today's availability of inexpensive computing power. As part of this book's comprehensive coverage of the MCRT formulation, it is packaged with a CD-ROM that includes:

- \* The student version of FELIX--The essential program for this book, it computes the exchange coefficients needed to solve problems of radiative heat transfer analysis using both the traditional and statistical methods
- \* A Mie scattering program--This program solves classic problems in radiative heat transfer by particles such as atmospheric aerosols

An invaluable book for undergraduate and graduate students in courses on radiative heat transfer, as well as engineers and researchers in areas related to power generation, solar power, refrigeration, and cryogenics, including general mechanical, chemical, electronics, and materials engineering.

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### **Editorial Review**

From the Back Cover

Practical, basic coverage of radiative heat transfer

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Whether used by itself or in conjunction with other Wiley books on thermodynamics and heat transfer, Radiation Heat Transfer: A Statistical Approach is an invaluable book for undergraduate and graduate students in courses on radiative heat transfer, as well as for engineers and researchers in areas related to power generation, solar power, refrigeration, and cryogenics, including general mechanical, chemical, electronics, and materials engineering.

#### **About the Author**

J. ROBERT MAHAN is a professor in the Department of Mechanical Engineering at Virginia Polytechnic Institute and State University.

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