1.
Record Nr.	UNINA9910786658603321
Autore	Balaji C.
Titolo	Essentials of radiation heat transfer / / C. Balaji
Pubbl/distr/stampa	Chichester, England ; ; New Delhi, [India] : , : Wiley : , : Ane Books Pvt. Ltd., , 2014 ©2014
ISBN	1-118-90830-9 1-118-90829-5
Descrizione fisica	1 online resource (258 p.)
Collana	Ane/Athena Books
Disciplina	621.402/2
Soggetti	Heat - Radiation and absorption Heat engineering
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Description based upon print version of record.
Nota di bibliografia	Includes bibliographical references and index.
Nota di contenuto	Cover; Title Page; Copyright; Preface; Contents; 1 Introduction; 1.1 Importance of thermal radiation; 1.2 Nature of radiation; 2 Black body and its characteristics; 2.1 Key attributes of a black body; 2.2 Solid angle - dw; 2.3 Spectral or monochromatic radiation intensity, I,e; 2.4 Spectral hemispherical emissive power; 2.5 Radiation pressure; 2.6 Relationship between the intensity, I and temperature, T; 2.7 Planck's distribution; 2.8 The Rayleigh Jeans distribution; 2.9 Planck's distribution - salient features; PROBLEMS; 3 Radiative properties of non-black surfaces 3.1 Why do we need a gray body model?3.2 Spectral directional emissivity, e'(λ,T,,ø); 3.3 Hemispherical spectral emissivity, e(λ, T); 3.4 Directional total emissivity, e'(T, , ø); 3.5 Hemispherical total emissivity, e(T); 3.6 Absorptivity, ; 3.7 Spectral directional absorptivity, '; 3.8 Hemispherical spectral absorptivity, (λ,TA); 3.9 Directional total absorptivity, (TA,,ø) ; 3.10 Hemispherical total absorptivity, (TA); 3.11 Reflectivity, ; 3.12 Transmissivity, ; 3.13 Spectral transmissivity (λ,t) ; 3.14 Optical pyrometry; PROBLEMS; 4 Radiation heat transfer between surfaces 4.1 Enclosure theory4.2 View factor; 4.3 View factor algebra; 4.4 View factors from direct integration; 4.5 Enclosure analysis; PROBLEMS; 5 Radiation in participating media; 5.1 Principal difficulties in studying

gas radiation; 5.2 Important properties for study of gas radiation; 5.3 Equation of transfer or Radiative transfer equation (RTE); 5.4 Solution for the straight path; 5.5 Heat fluxes; PROBLEMS; 6 Introduction to atmospheric radiation; 6.1 Introduction; 6.2 Electromagnetic spectrum; 6.3 Black body radiation; 6.4 Radiative transfer equation for a plane parallel atmosphere

6.5 Radiative transfer equation (RTE} for an absorbing and emitting atmosphere6.6 Infrared remote sensing; PROBLEMS; 7 Inverse problems in radiation; 7.1 Introduction; 7.2 Least squares minimization for parameter estimation; 7.3 The Bayesian method for inverse problems; PROBLEMS; Bibliography; Index

| Sommario/riassunto | Essentials of Radiation Heat Transfer is a textbook presenting the essential, fundamental information required to gain an understanding of radiation heat transfer and equips the reader with enough knowledge to be able to tackle more challenging problems. All concepts are reinforced by carefully chosen and fully worked examples, and exercise problems are provided at the end of every chapter. In a significant departure from other books on this subject, this book completely dispenses with the network method to solve problems of radiation heat transfer in surfaces. It instead prese |