1.	Record Nr.	UNINA9910683355403321
	Autore	Zudin IU. B (IUrii Borisovich)
	Titolo	Theory of periodic conjugate heat transfer / / Yuri B. Zudin
	Pubbl/distr/stampa	Cham, Switzerland : , : Springer Nature Switzerland AG, , [2023] ©2023
	ISBN	9783031251672 9783031251665
	Edizione	[Fourth edition.]
	Descrizione fisica	1 online resource (460 pages)
	Collana	Mathematical Engineering, , 2192-4740
	Disciplina	536.25015118
	Soggetti	Heat - Conduction - Mathematical models Heat - Convection - Mathematical models Heat - Transmission - Mathematical models
	Lingua di pubblicazione	Inglese
	Formato	Materiale a stampa
	Livello bibliografico	Monografia
	Nota di bibliografia	Includes bibliographical references.
	Nota di contenuto	Introduction -- Construction of a General Solution -- Solution of Characteristic Problems -- Algorithm of Computation of the Factor of Conjugation -- Solution of Special Problems -- Engineering Applications of the Theory -- Wall Thermal Effect on Hydrodynamic Flow Stability -- Liquid Film Evaporation (Landau Instability) -- Hyperbolic Heat Conduction Equation -- Bubbles Dynamics in Liquid -- Taylor bubble (Rise Velocity and Geometric Characteristics) -- Periodical Model of Turbulent Heat Transfer -- Variable Heat Transfer Coefficient (Heat Conduction Problem) -- Model of the Evaporating Meniscus.
	Sommario/riassunto	An original method of investigation of the conjugate conductive-convective problem of periodic heat transfer is developed. The novelty of the approach is that a particular conjugate problem is replaced by a general boundary-value problem for the heat conduction equation in the solid. Within the framework of the hyperbolic model of thermal conductivity, the effect of self-reinforcement of the degree of conjugation by increasing the period of oscillations is found. The processes of hydrodynamics and heat exchange with periodic internal structure are considered: periodic model of turbulent heat transfer, hydrodynamic instability, bubbles dynamics in liquid, and model of

evaporating meniscus. The book is intended as a source and reference work for researchers and graduate students interested in the field of conjugate heat transfer.