1.	Record Nr.	UNINA9910481959703321
	Autore	Wang Chao
	Titolo	Theory of Translation Closedness for Time Scales : With Applications in Translation Functions and Dynamic Equations / / by Chao Wang, Ravi P. Agarwal, Donal O' Regan, Rathinasamy Sakthivel
	Pubbl/distr/stampa	Cham : , : Springer International Publishing : , : Imprint : Springer, , 2020
	ISBN	3-030-38644-9
	Edizione	[1st ed. 2020.]
	Descrizione fisica	1 online resource (XVI, 577 p. 17 illus., 8 illus. in color.)
	Collana	Developments in Mathematics, , 1389-2177 ; ; 62
	Disciplina	511
	Soggetti	Difference equations Functional equations Harmonic analysis Mathematical models Functions of real variables Difference and Functional Equations Abstract Harmonic Analysis Mathematical Modeling and Industrial Mathematics Real Functions
	Lingua di pubblicazione	Inglese
	Formato	Materiale a stampa
	Livello bibliografico	Monografia
	Note generali	Includes index.
	Nota di contenuto	Preface -- Preliminaries and Basic Knowledge on Time Scales -- A Classification of Closedness of Time Scales under Translations -- Almost Periodic Functions and Generalizations on Complete-Closed Time Scales -- Piecewise Almost Periodic Functions and Generalizations on Translation Time Scales -- Almost Automorphic Functions and Generalizations on Translation Time Scales -- Nonlinear Dynamic Equations on Translation Time Scales -- Impulsive Dynamic Equations on Translation Time Scales -- Almost Automorphic Dynamic Equations on Translation Time Scales -- Analysis of Dynamical System Models on Translation Time Scales -- Index.
	Sommario/riassunto	This monograph establishes a theory of classification and translation closedness of time scales, a topic that was first studied by S. Hilger in 1988 to unify continuous and discrete analysis. The authors develop a

theory of translation function on time scales that contains (piecewise) almost periodic functions, (piecewise) almost automorphic functions and their related generalization functions (e.g., pseudo almost periodic functions, weighted pseudo almost automorphic functions, and more). Against the background of dynamic equations, these function theories on time scales are applied to study the dynamical behavior of solutions for various types of dynamic equations on hybrid domains, including evolution equations, discontinuous equations and impulsive integro-differential equations. The theory presented allows many useful applications, such as in the Nicholson`s blowfiles model; the Lasota-Wazewska model; the Keynesian-Cross model; in those realistic dynamical models with a more complex hibrid domain, considered under different types of translation closedness of time scales; and in dynamic equations on mathematical models which cover neural networks. This book provides readers with the theoretical background necessary for accurate mathematical modeling in physics, chemical technology, population dynamics, biotechnology and economics, neural networks, and social sciences.