1. Record Nr. UNINA990000495780403321

Autore	Yovits, Marshall C.
Titolo	Advannces in Compuiters vol. 17 / Yovits Marshall C.
Pubbl/distr/stampa	N.Y. : A.P., 1978
Locazione	DINEL
Collocazione	10 P.T. 1/17
Lingua di pubblicazione	Italiano
Formato	Materiale a stampa
Livello bibliografico	Monografia

2. Record Nr. UNINA9910915687303321

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Titolo	Multi-Parameter Hardy Spaces Theory and Endpoint Estimates for Multi-Parameter Singular Integrals
Pubbl/distr/stampa	Providence : , : American Mathematical Society, , 2023 ©2023
ISBN	1-4704-7321-6
Edizione	[1st ed.]
Descrizione fisica	1 online resource (100 pages)
Collana	Memoirs of the American Mathematical Society ; ; v.281
Classificazione	42B2042B2542B30
Altri autori (Persone)	ShenJiawei ZhangLu
Disciplina	515/.98 515.98
Soggetti	Hardy spaces Singular integrals Littlewood-Paley theory Harmonic analysis on Euclidean spaces -- Harmonic analysis in several variables -- Singular and oscillatory integrals (Calderon-Zygmund, etc.) Harmonic analysis on Euclidean spaces -- Harmonic analysis in several variables -- Maximal functions, Littlewood-Paley theory Harmonic analysis on Euclidean spaces -- Harmonic analysis in several variables -- Hardy-spaces
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia

Nota di contenuto	Cover -- Title page -- Chapter 1. Introduction -- Acknowledgments -- Chapter 2. Single-parameter theory -- 2.1. Singular integral operators and elementary operators -- 2.2. Discrete Littlewood-Paley-Stein theory and Hardy spaces -- 2.3. Endpoint estimate for one-parameter singular integrals -- Chapter 3. Multi-parameter setting: Product theory -- 3.1. Product singular integral operators -- 3.2. Hardy spaces on the product space -- 3.3. Endpoint estimates on product singular integrals -- Chapter 4. General multi-parameter singular integrals and Hardy spaces -- 4.1. Assumptions for vector fields -- 4.2. Multi-parameter Hardy spaces -- 4.3. ^{ } boundedness of multi-parameter singular integrals -- Bibliography -- Back Cover.
Sommario/riassunto	"The main purpose of this paper is to establish the theory of the multi-parameter Hardy spaces Hp (0 [less than] p [less than or equal to] 1) associated to a class of multi-parameter singular integrals extensively studied in the recent book of B. Street (2014), where the Lp (1 [less than] p [less than] [infinity]) estimates are proved for this class of singular integrals. This class of multi-parameter singular integrals are intrinsic to the underlying multi-parameter Carnot-Caratheodory geometry, where the quantitative Frobenius theorem was established by B. Street (2011), and are closely related to both the one-parameter and multi-parameter settings of singular Radon transforms considered by Stein and Street (2011, 2012a, 2012b, 2013). More precisely, Street (2014) studied the Lp (1 [less than] p [less than] [infinity]) boundedness, using elementary operators, of a type of generalized multi-parameter Calderon Zygmund operators on smooth and compact manifolds, which include a certain type of singular Radon transforms. In this work, we are interested in the endpoint estimates for the singular integral operators in both one and multi-parameter settings considered by Street (2014). Actually, using the discrete Littlewood-Paley-Stein analysis, we will introduce the Hardy space Hp (0 [less than] p [less than or equal to] 1) associated with the multi-parameter structures arising from the multi-parameter Carnot-Caratheodory metrics using the appropriate discrete Littlewood-Paley-Stein square functions, and then establish the Hardy space boundedness of singular integrals in both the single and multi-parameter settings. Our approach is much inspired by the work of Street (2014) where he introduced the notions of elementary operators so that the type of singular integrals under consideration can be decomposed into elementary operators"--