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The Hardy–Littlewood maximal operator on some critical weighted Herz spaces with variable exponent[†]

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Abstract

Our aim in this paper is to define a new class of weighted critical Herz spaces with variable exponent and to prove the boundedness of the Hardy–Littlewood maximal operator on the spaces with power weights.

Keywords: Herz space, variable exponent.

MSC: Primary 42B35; Secondary 42B25.

§1. Introduction

Herz spaces have played an important role in recent harmonic analysis because they have an interesting norm including both local and global properties. We refer to the book [31] for the history of Herz spaces. Based on the classical Muckenhoupt theory [14, 33, 35] some classes of weighted Herz spaces have been defined and the boundedness of many operators on those spaces has been proved [27, 28, 30, 32, 34].

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