

# *On the Theory of Lipschitz Spaces of Distributions on Euclidean $n$ -Space*

## *I. Principal Properties*

BY  
MITCHELL H. TAIBLESON<sup>1</sup>

*Communicated by E. HOPF*

### CHAPTER

I. Introduction	
Background.....	407
Summary.....	410
Conventions and Notation.....	411
II. Preliminaries.....	413
III. Lipschitz Spaces, $\alpha > 0$ .....	421
IV. Bessel Potentials.....	426
V. More Preliminaries.....	431
VI. Lipschitz Spaces, $\alpha$ real.....	435
VII. The Relation of Lipschitz Spaces to Lebesgue Spaces....	451
VIII. Lipschitz Spaces on the Torus; The Periodic Case.....	460
IX. Examples and other Negative Results.....	470
List of References.....	478

### CHAPTER I: INTRODUCTION

**Background.** This paper is the first of a series in which smoothness properties of functions and distributions in several variables will be systematically discussed. The material presented will consist, in part, of the principal results of the author's doctoral dissertation directed by E. M. Stein at the University of Chicago. The germ of this development is in a group of papers by Hardy

---

<sup>1</sup> Preparation of this paper supported by the U. S. Army Research Office (Durham), Contract No. DA-31-124-ARO(D)-58.