Part II

Advanced theory
The core of this part is formed by the first three chapters, where we prove some fine covering theorems, employ them for construction of Calderón–Zygmund type decompositions in new cases, specifically, for couples of the form

\((L^p, \text{some space of smooth functions})\),

construct near-minimizers for such couples, and finally, prove that these near-minimizers are stable under the action of singular integral operators.

The remaining content (Chapter 11 and the Appendix) can be viewed as a supplement to the mainstream. There we consider some subtler settings in which the methods under study are still applicable. Chapter 11 is devoted to a limiting case in the theory of near-minimizers in Chapter 9. Technically, this topic turns out to be quite involved; moreover, an answer is obtained only in dimension 2, and the case of bigger dimensions remains open, though there are some natural conjectures. In the Appendix, we show how the methods can be generalized beyond the framework of Chapter 9, where one of the spaces in the couple is obligatory \(L^p\).