Certain Function Spaces in The Context of Oscillatory Integrals

by

Malak Yasir Shaker Lafi
B. Sc. Mathematics, Yarmouk University,

Thesis submitted in partial fulfilment of
the requirements for the degree of Master of Science
in Department of Mathematics, Yarmouk University.
Irbid, Jordan

Thesis Defense Committee:
Prof. Ahmad Al-Salman
Supervisor and Chairman

Prof. Abdulla Al-Jarrah
Co-supervisor

Prof. Wasfi Ahmed Ayid Shatanawi
Member

Prof. Sharifa Na'em Al-Sharif
Member

18/5/2015
Abstract

Lafi, Malak Yasir, Certain Function Spaces in The Context of Oscillatory Integrals, Master of science thesis, Department of Mathematics, Yarmouk University, 2015 (Supervisor: Dr. Ahmad Al–Salman, Co supervisor: Dr. Abdulla Al–Jarrah). In this thesis, we study a class of oscillatory singular integral operators. We study the $L^p$-boundedness of such operators when their phase functions are general and their kernels satisfying weak conditions. we obtain the $L^p$-boundedness of our operator when their kernels are in the block space $B_q^{(0,0)}(\mathbb{S}^{n-1})$ for some $q > 1$.

Keywords: Oscillatory singular integral operators, Block spaces, $L^p$ estimates, Hardy–littlewood maximal function.