

## Abstract

In this thesis, we emphasize the study of weighted norm inequalities for some classical operators in Harmonic analysis, for example, maximal functions, fractional minimal functions, and integral operators of Hardy and Hardy-Steklov type. The first chapter is introductory. We present some rudimentary results that are required to establish the main results in the subsequent chapters. In the second chapter, we establish the weighted vector-valued estimates of weak type  $(1, 1)$  and strong type  $(p, p)$ ,  $p \in (1, \infty)$  for a one-sided generalized version,  $M_\psi^+$ , of the classical maximal function on the set of the real line. We also establish Fefferman-Stein's weighted inequality for the operator  $M_\psi^+$  in the scalar setting and vector-valued setting. We prove weighted weak and strong type norm estimates for a one-sided fractional minimal function,  $m_\mu^+$  on  $\mathbb{R}$  and also establish an equivalence relation between the two weight classes in the third chapter. The fourth chapter is devoted to study the two weighted weak type  $(p, q)$  and strong type  $(p, q)$  estimates for a dyadic version of one-sided fractional maximal function,  $\mathcal{M}_\mu^{+,d}$  for  $0 \leq \mu < 1$  on  $\mathbb{R}^n$ . In the fifth and sixth chapter, we present weighted weak and extra-weak integral inequalities of mixed type for the modified integral Hardy and Hardy-Steklov operators and their adjoints.