MAXIMAL COMMUTATOR AND COMMUTATOR OF MAXIMAL FUNCTION ON TOTAL MORREY SPACES

VAGIF S. GULIYEV

Abstract. In this paper we introduce a new variant of Morrey spaces called total Morrey spaces $L^{p,\lambda,\mu}(\mathbb{R}^n)$. These spaces generalize the classical Morrey spaces so that $L^{p,\lambda,\lambda}(\mathbb{R}^n) \equiv L^{p,\lambda}(\mathbb{R}^n)$ and the modified Morrey spaces so that $L^{p,\lambda,\lambda}(\mathbb{R}^n) \equiv L^{\lambda,\lambda}(\mathbb{R}^n)$. We give basic properties of the spaces $L^{p,\lambda,\lambda}(\mathbb{R}^n)$ and study some embeddings into the Morrey space $L^{p,\lambda,\mu}(\mathbb{R}^n)$. We also give necessary and sufficient conditions for the boundedness of the maximal commutator operator $M_b$ and commutator of maximal operator $[b,M]$ on $L^{p,\lambda,\mu}(\mathbb{R}^n)$. We obtain some new characterizations for certain subclasses of $BMO(\mathbb{R}^n)$.


Keywords and phrases: Total Morrey spaces, maximal operator, commutator, $BMO$ spaces.

REFERENCES


