

# WEIGHTED VARIABLE MODULATION SPACES

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ABSTRACT. The aim of this paper is to develop a theory of weighted modulation spaces with variable exponent. All we assume on the exponent is that the essential infimum of the exponent is positive. We shall show that the auxiliary parameter can be removed assuming, in addition, that the weight belongs to the variable Muckenhoupt class and that the exponents satisfy the log-Hölder condition and the log-decay condition. Under these assumptions, we prove the molecular decomposition theorem and boundedness of pseudo-differential operators with symbol  $S_{00}^0$ .