

Recent Progress on Composition in Weighted Modulation Spaces

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In the theory of nonlinear partial differential equations we need to explain composition operators. We introduce a class of general ultradifferentiable weights for modulation spaces $\mathcal{M}_{p,q}^{w*}$ which have at most subexponential growth. We establish analytic as well as non-analytic composition results in the spaces $\mathcal{M}_{p,q}^{w*}$. Moreover, we study the existence of the product of two modulation spaces $M_{p,q}^s$ equipped with polynomial weights. This will give us the opportunity to treat the boundedness of composition operators acting on $M_{p,q}^s$.