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On L^p-boundedness of pseudo-differential operators of Sjöstrand's class

Abstract: We extended the known result that symbols from modulation spaces $M^{\infty,1}(\mathbb{R}^{2n})$, also known as the Sjöstrand's class, produce bounded operators in $L^2(\mathbb{R}^n)$, to general L^p boundedness at the cost of loss of derivatives. Indeed, we showed that pseudo-differential operators acting from L^p-Sobolev spaces $L^p_s(\mathbb{R}^n)$ to $L^p(\mathbb{R}^n)$ spaces with symbols from the modulation space $M^{\infty,1}(\mathbb{R}^{2n})$ are bounded, whenever $s \geq n|1/p - 1/2|$. This estimate is sharp for all $1 < p < \infty$.