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Hans G. Feichtinger* (hans.feichtinger@univie.ac.at), NuHAG, Dept. Math., Univ. Vienna, Strudlhofgasse 4, A-1090 Vienna, CA, Austria. *Approximation of linear operators by Gabor multipliers.*

Given some nice Gabor atom g and a sufficiently dense lattice in the time-frequency domain the TF-shifts of g generate a Gabor frame. Using it one defines *Gabor multiplier operators* as a composite of the analysis operator, providing the Gabor coefficients, followed by a pointwise multiplier and then resynthesis. If a tight atom is used one even has a form of functional calculus in the sense that the constant multiplier yields a multiple of the identity operator, and bounded sequences give rise to bounded operators on L^2 , for example.

There is a lot known about the mapping properties of Gabor multipliers between modulation spaces. The main topic of the talk will be the following problem: Given any linear operator (say on L^2) is there something like a best approximation by a Gabor multiplier (using a given tight Gabor frame). We will answer this question by showing that there is a natural answer in the case of Hilbert-Schmidt operators, but that this best approximation procedure is linear and extends to much larger families of operator spaces. Furthermore, we will indicate how one can show that an STFT-multiplier arises in a natural way as the limit of a sequence of Gabor multipliers, with lattices of increasing density. (Received September 24, 2002)