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*Toeplitz Quantization*

I discuss some recent work with Wolfram Bauer and Raffael Hagger. Here, $C^n$ is complex n-space and, for z in $C^n$, we consider the standard family of Gaussian measures $d\mu_t(z) = (4\pi t)^{-n} exp(-|z|^2/4t)dv(z), t > 0$ where $dv$ is Lebesgue measure. We consider the Hilbert space $L^2_t$ of all $\mu_t$-square integrable complex-valued measurable functions on $C^n$ and the closed subspace of all square-integrable entire functions, $H^2_t$. For $f$ measurable and $h$ in $H^2_t$ with $fh$ in $L^2_t$, we consider the Toeplitz operators $T^{(t)}_f h = P^{(t)}(fh)$ where $P^{(t)}$ is the orthogonal projection from $L^2_t$ onto $H^2_t$. For bounded $f$ ($f$ in $L^\infty$) and some unbounded $f$, these are bounded operators with norm $|| \cdot ||_t$. For $f, g$ bounded, with "sufficiently many" bounded derivatives, there are known deformation quantization conditions, including $(0) lim_{t\to 0} ||T^{(t)}_f||_t = ||f||_\infty$ and $(1) lim_{t\to 0} ||T^{(t)}_f T^{(t)}_g - T^{(t)}_{fg}||_t = 0$. We exhibit a pair of bounded real-analytic functions $F, G$ so that $(1)$ fails. On the positive side, for the space $VMO$ of functions with vanishing mean oscillation, we show that $(1)$ holds for all $f$ in (the sup-norm closed algebra) $VMO \cap L^\infty$ and $g$ in $L^\infty$. $(1)$ also holds for all $f$ in $UC$ (uniformly continuous functions, bounded or not) while $(0)$ holds for all bounded continuous $f$.