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Uncertainty principles for integral operators

Saifallah Ghobber (MAPMO), Philippe Jaming (IMB)

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The aim of this paper is to prove new uncertainty principles for an integral operator \$\tt\$ with a bounded kernel for which there is a Plancherel theorem. The first of these results is an extension of Faris's local uncertainty principle which states that if a nonzero function \$f\in L^2(\R^d,\mu)\$ is highly localized near a single point then \$\tt (f)\$ cannot be concentrated in a set of finite measure. The second result extends the Benedicks-Amrein-Berthier uncertainty principle and states that a nonzero function \$f\in L^2(\R^d,\mu)\$ and its integral transform \$\tt (f)\$ cannot both have support of finite measure. From these two results we deduce a global uncertainty principle of Heisenberg type for the transformation \$\tt\$. We apply our results to obtain a new uncertainty principles for the Dunkl and Clifford Fourier transforms.

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