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UNCERTAINTY PRINCIPLES REVISITED*

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Abstract. The Heisenberg uncertainty principle and the uncertainty principle for self-adjoint operators have been known and applied for decades. Both in quantum mechanics and in time-frequency analysis they play an important role. In this paper, the uncertainty principle is extended to symmetric operators and to normal operators. Further, different function spaces are studied in which we obtain a number of uncertainty principles of same type using various operators.

Key words. uncertainty principle, self-adjoint operators, symmetric operators, normal operators, periodic functions, ultraspherical polynomials, sphere.

AMS subject classifications. 26D10, 42C25, 47A05, 47A30, 47B47.

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