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Self-adjointness and Complex Structures in Klein-Gordon Theory

In this talk we prove that the spatial part of the linear Klein–Gordon operator for a massive scalar field with external potential in a globally hyperbolic spacetime is an essentially self-adjoint operator. The proof is conducted by a fusion of new results concerning globally hyperbolic manifolds, the theory of weighted Hilbert spaces and operational analytic advances in the aforementioned area. This operator is then further on used to construct complex structures for Klein–Gordon theory in globally hyperbolic spacetimes.