GENERALIZED FOURIER INTEGRAL OPERATORS AND APPLICATIONS TO EVOLUTION EQUATIONS

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ABSTRACT. We will give a definition of generalized Fourier integral operators in the framework of the Weyl-Hörmander calculus and apply this to evolution equations $\partial u/\partial t = iAu$ where $A = a^w(x, D)$ is a formally selfadjoint pseudodifferential operator whose (Weyl) symbol is a.

For instance, a Schrôdinger-like equation. Under conditions on a and on the dynamics of its hamiltonian flow one can prove that the operator a^w is essentially self-adjoint and that its propagators e^{itA} are bounded between (generalized) Sobolev spaces and are (generalized) Fourier integral operators.