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The sojourn relation and the Schrödinger equation

We discuss the construction of a parametrix for the time-dependent Schrödinger equation in non-trapping regions of a manifold X with asymptotically conic ends. The construction, in the framework of the "Legendrian distributions" of Melrose-Zworski (generalized by Hassell and Vasy) involves a phase function parametrizing a certain relation between points in the cosphere bundle of X and the (rescaled) cotangent bundle of the boundary of the compactification. We call this relation the 'sojourn time' owing to its similarity to the sojourn time in scattering theory introduced by Guillemin. As a consequence, we are able to prove some new results on propagation of singularities for the Schrödinger operator.