

# On Lax-Phillips scattering matrix of the abstract wave equation

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The dependence of singularities of scattering matrices of the abstract wave equation on the choice of asymptotically equivalent outgoing/incoming subspaces is studied. The obtained results are applied to the radial wave equation with nonlocal potential. In the latter case, the concept of associated inner function introduced in the Douglas-Shapiro-Shields work: Cyclic vectors and invariant subspaces for the backward shift operator, *Annales de l'insitut Fourier* 20 (1970), p. 37-76, plays an essential role.