

SPECTRAL ANALYSIS OF THE DISSIPATIVE BOLTZMANN OPERATOR AND SPECTRAL SINGULARITIES

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We present some results on the spectral analysis of the dissipative one-speed Boltzmann operator [1]. It is shown that the essential spectrum of the operator is absolutely continuous with one possible spectral singularity at the point 0. The spectral singularity appears for a discrete set of values of a physical parameter involved in the problem. The absolutely continuous component of the operator is shown to be similar to a direct sum of a selfadjoint operator and an operator with spectrum of finite multiplicity. We also study the geometry of invariant subspaces of the operator in the presence of the spectral singularity. The consideration is based on the abstract setup of the functional model of Sz-Nagy and Foias.

[1] Yu. A. Kuperin, S. N. Naboko and R. V. Romanov. Spectral analysis of the one-speed transport operator and the functional model, *Funct. Anal. Appl.*, vol. 33 (1999), no. 3, 199 - 207.