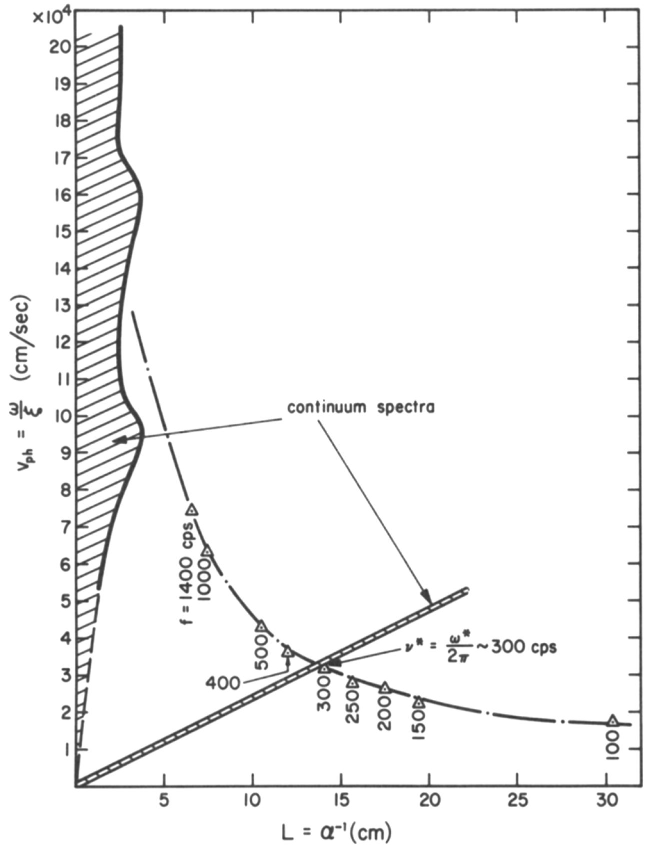

Fig. 2. Phase velocity v_{ph} vs attenuation length L for the wave experiment in graphite. The shaded regions correspond to the theoretical continuum C while the △ represent a superimposed plot of the data of Perez and Booth[3].

$$\Sigma_s(v',v) = \beta\Sigma_i(v)vM(v)\Sigma_i(v') + \Sigma_e(v)\delta(v-v')$$

to study wave propagation in graphite. The goal for such work is to provide a suitable procedure for analyzing and interpreting the experimental data obtained for $\omega > \omega^*$.

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On the Continuous Eigenvalue Spectrum of the Neutron-Wave Experiment

Dr. Duderstadt brings to light in his letter some interesting points in neutron-wave theory which indeed can trap the unwary in confusion. Apparent differences in his results and mine[1] are, at first sight, puzzling. The purpose of this letter is to resolve our apparent differences.

The essential difference between our work is that our goals are different. His purpose is to map the eigenvalue spectrum of the Boltzmann equation for temporally oscillatory solutions. My purpose, considerably less ambitious, was to define an experimentally interesting region of the K plane. In this connection, my eigenvalue problem became a problem in the scalar flux (the experimentally observable quantity). For this reason, my "continuum region" is manifestly different from that of Dr. Duderstadt who (like Dr. Travelli) considers the eigenvalue problem for the vector flux. Moreover, and more important, my condition $\omega < (v\ \Sigma_T)_{\min}$ is not meant to indicate a region where 1) no continuum is found, or 2) a region where all discretum is found but rather a region in which, if a measurable dispersion law exists, one is certain to find it.

It would appear from this work, however, that the noncompactness of the crystalline moderator scattering operator can contribute the line Γ, which gives rise to relatively nonattenuated continuum solutions at lower frequencies than the minimum collision frequency. Although the amplitude of this signal may be small, one should see it in the far asymptotic region. Experimentally, the first Fourier moment[2] $(\bar{t})$ in a pulse propagation experiment should, if there is no continuum present, be a linear function of z, the detector position. If Γ is, in fact, present, one should see a linear dependence upon z for a range of z, followed by a deviation from this behavior at large z. All this should take place at $\omega < (v\ \Sigma_T)_{\min}$. Of course, the system would have to be large enough in the z direction to avoid reflections (end effects). It is to be hoped that repetitions of the Perez-Booth experiment[3] in larger systems will search for this effect.

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