ponents. It is probable that the number of registered components, at the given sensitivity of the setup, is determined also by the intensity of the exciting light and by the intensity of the SMBS of the fused quartz before entering the cell with the liquid.** Confirming the foregoing statement is an experiment in which, all other conditions being the same, the fused quartz was replaced by single-crystal quartz, the stimulated scattering of which contained only a weak Stokes MB component. In this case the spectrum of the light passing through the cell with the CS_2 revealed no additional components.

In conclusion, it must be noted that the amplification of a large number of SMBS components, occupying a region of several dozen cm^{-1}, under suitable conditions, will apparently find practical application alongside with light generators of tunable frequency.

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* The anti-Stokes SMBS component can arise as a result of repeated scattering in the region of interaction of the laser emission with hypersound waves [3]. Then the first Stokes SMBS component scattered at $\theta = 180°$ is again scattered, but now in the direction of the laser emission, and gives rise to a hypersound wave in the opposite direction. The scattering of the laser emission by this wave leads to the appearance of the first anti-Stokes SMBS component, etc.

** We used a ruby laser of power rating ~110 MW at a pulse duration ~12 nsec.

ATTENUATION OF CURRENT IN A SUPERCONDUCTING RING UNDER THE INFLUENCE OF A LOW-FREQUENCY MAGNETIC FIELD

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The problem of the dissipative mechanisms in superconductors of the first and second kind placed in an alternating magnetic field was considered in a number of papers [1-5]. The presence of dissipation was revealed in some cases by the heating of the sample [1,4], and in others by the penetration of an external field in a doubly-connected superconducting region at total fields that were known to be lower than the critical value [3,5]. These experiments, however, yielded no information to indicate whether the observed loss effects are connected with reversal of magnetization of the regions near the surface defects ("weak spots") or with resistive effects connected with the motion of n-regions.

We undertook experiments aimed at observing the attenuation of the current in a superconducting ring placed in an alternating magnetic field. Such a formulation of the experiment makes it possible, in our opinion, to determine directly whether the presence of the alternating magnetic field leads to resistive effects.

The experiments were performed with a lead ring (1 cm diameter, $S = 0.1 \times 0.1$ cm^2). In the presence of an external homogeneous magnetic field $H_=$ perpendicular to the plane of the ring, an undamped current I_0 was induced in the ring. The value of this current was registered with a test coil oscillating near the surface of the ring. An alternating magnetic field of amplitude $h_\sim$, perpendicular to the plane of the ring, was applied to the constant field ($H_=$) for a fixed time. The frequency of the alternating field was 30 Hz. After a definite time t the alternating field was turned off and the direct current I in the ring was recorded. In this manner we plotted $I = f(t)$ for different values of $H_=$ and $h_\sim$.

The results add up to the following:

1. We observed attenuation of the current in the ring at total field values corresponding to the region near the end of the linear section of the magnetization curve of the ring.

2. Measurements made in constant magnetic fields of the same magnitudes revealed no dependence of the current in the ring on the observation time.

3. The maximum relaxation times reach ~1 hour, corresponding to an effective ring resistivity $\rho_{eff} \sim 10^{-14}$ ohm-cm. The relaxation times decrease with increasing total field.

4. The character of the attenuation depends on the relation between $h_\sim$ and $H_=$:
a) when $H_= > h_\sim$ no attenuation is observed until the total field $H_= + h_\sim$ reaches a value corresponding to the end of the linear section of the magnetization curve. Beyond the linear section one observes, naturally, a sharp decrease in the ring current (after a time which is in any case smaller than the time constant of the apparatus, ~1 sec), which is followed, however, by a smooth attenuation with a large relaxation time (see item 3);
b) when $H_= \lesssim H_\sim$, the attenuation is smooth from the very beginning, with large relaxation times that decrease gradually with increase of the total field.

5. The dependence of the current in the ring on the time of action of the alternating field flattens out (whereupon the relative change in the current can reach a value ~ 40%).

The experimental results may possibly be attributed to the fact that the total magnetic field exceeds the critical value in certain regions on the surface of the sample, contributing by the same token to the creation of n-regions which by themselves cannot cause attenuation of the current circulating in the ring. The resistive effect can arise only as a result of continuous motion of such regions, and the motion can, in particular, be enhanced by the presence of an alternating-sign Lorentz force exerted on these regions by the current induced in the ring by the external field. When $h_\sim < H_=$, and the total current induced in the ring is pulsating, i.e., the Lorentz force does not reverse sign, the n-regions remain stationary after they reach the boundaries of the ring. In the opposite case ($h_\sim > H_=$) the Lorentz force is sign-reversing, and the n-regions can oscillate near the ring boundaries, causing the appearance of an effective resistance. While calling attention to the smallness of this resistance and to the dependence of the effect not only on the total field $H_= + h_\sim$ but also on the ratio of $H_=$ to $h_\sim$, we must note that the observed effect can hardly be ascribed to the occurrence of an intermediate state, although a resistive effect could take place, say, in the case when the ring breaks up into layers of n- and s-phases directed along the current and moving in a perpendicular direction [6]. Then, however, the attenuation should occur regardless of whether the total field applied to the ring is constant, pulsating, or alternating.

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POLARIZATION OF CCl_4 IN REFLECTED SHOCK WAVES

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It has been shown experimentally [1] that no polarization of dielectrics whose molecules have no constant dipole moment is observed following shock loading. It turns out, however, that dielectrics that are nonpolar in the initial state (benzene, CCl_4, and others) can become polarized by double compression.

We present in this note the results of an investigation of the polarization produced in reflected shock waves in CCl_4.

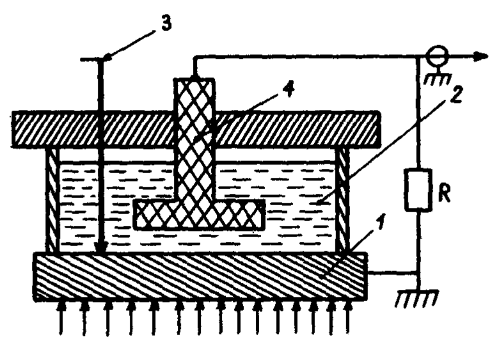

Fig. 1. Experimental setup: 1 - aluminum screen 8 mm thick, 2 - investigated substance, 3 - pickup recording the entrance of the shock wave in the CCl_4, 4 - electrode, 23 mm in diameter, made of different metals.

The experimental setup is illustrated in Fig. 1. The arrows indicate the direction of propagation of the plane shock front from an active explosive charge, producing dynamic loading of the CCl_4 up to ~180 kbar in the forward wave. We used in the experiments the OE-2 oscilloscope constructed by the branch of the Institute of Chemical Physics of the USSR