shift of the maximum of ρ_{zz} toward larger fields with decreasing temperature [4,5]. At $T \leq 100°K$, when the contribution of the optical scattering becomes small, the maximum of ρ_{zz} vanishes (Fig. 1).

In the $\hbar\Omega \sim kT$ region, ρ_{zz} has a negative section in the form of a broad minimum (Fig. 1). Therefore the presence of an MPR maximum at 110 kG leads to the appearance of two minima at ~78 and ~160 kG, which are not connected with the resonant scattering.

It is apparently impossible to set the maximum of ρ_{zz} at 110 kG in correspondence with the SMR transition $\epsilon_{0,+} \rightarrow \epsilon_{1,-}$, for at 300°K and at 110 kG the splitting of the Landau-level $g\mu_B H$ amounts to only ~0.3 kT.

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CONTINUOUS COHERENT RADIATION OF EPITAXIAL DIODES OF GaAs at 77°K

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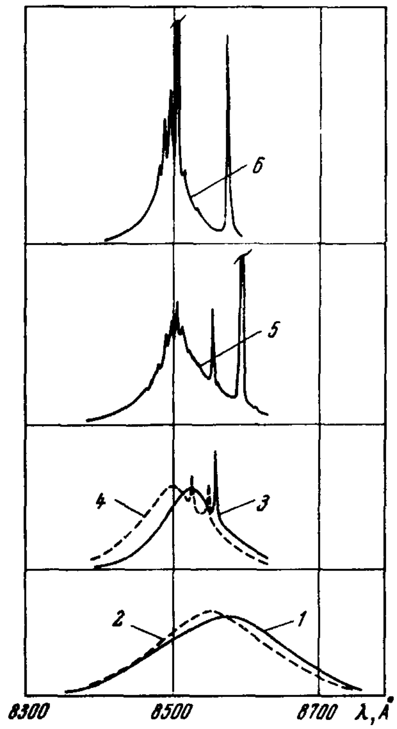
Submitted 13 July 1966
ZhETF Pis'ma 4, No. 6, 208-210, 15 September 1966

In this article we report continuous generation from a GaAs semiconductor laser with epitaxial pn junction operating with the medium at 77°K.

The junction was produced by liquid epitaxy by the Nelson method [1]. The substrate was a plate made of p-type material with hole density 2.4×10^{19} cm^{-3} and mobility 50 cm^2/V-sec oriented along the (100) crystallographic plane. The epitaxial layer was doped with tellurium to a density ~5×10^{18} cm^{-3}. Ohmic contacts were produced by vacuum sputtering of indium. A Fabry-Perot type resonator was produced by cleavage along the (110) plane. The finished diode was mounted in a holder with copper clamp contacts. The batch of diodes had resonator dimensions 0.2 x 0.2 mm and a thickness (distance between contacts) 0.15 mm.

The figure shows the development of the emission spectrum of the same diode as a function of the exciting current. Spectra 1, 3, 5, and 6 were obtained under continuous operation (currents 50, 250, 410, and 770 mA, respectively). Spectra 2 and 4 were obtained in pulsed operation (pulse duration 5 μsec, repetition frequency 10 kcs, currents 83 and 262 mA). It is seen that the maximum of the recombination spectrum shifts toward shorter wavelengths with increasing current; this shift is due to the "dispersal" of the Fermi quasilevels with increasing pump energy, and also to the shift to the long-wave section of the spectrum in the continuous mode, relative to the spectrum in the pulsed mode, connected with the constant heating of the active region in the continuous case. This difference between the spectra in the two modes is larger for small currents and decreases on approaching the threshold current. The latter effect is connected with the presence of deep electronic levels with very low state density [2].



Coherent radiation in the continuous mode occurs at a current of 250 mA (612 A/cm^2). The narrow spectral line appearing in this case corresponds most probably to the nonaxial "annular" type of resonator oscillations. At 410 mA (1020 A/cm^2), a new system of coherent lines appears, which can be interpreted as corresponding to axial modes of the cavity.

The total emission power of the diode for which the spectra are presented is 5 mW at the appearance of the first coherent line and 70 mW at a current 1.5 A.

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NEW GENERATION LINES OF A PULSED IODINE-VAPOR LASER

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Submitted 15 July 1966
ZhETF Pis'ma 4, No. 6, 210-213, 15 September 1966

We report in this note the observation of four new generation lines in a pulsed discharge in iodine vapor. An ordinary laser was used in the experiments, with quartz windows mounted at the Brewster angle and with external mirrors. Glass tubes with internal cold aluminum electrodes were used. The inside diameters of the tubes were 10 - 12 mm, and the discharge lengths 80 - 100 cm. The tube was excited by current pulses from the discharge of a 0.01 μF capacitor through a controlled three-electrode discharge gap. The capacitor voltage was adjustable from 10 to 50 kV, the discharge current reached approximately 1 kiloampere. The iodine crystals were placed in a lateral stub separated from the discharge tube by a valve. During the operation, the iodine vapor was first admitted into the discharge tube and then