**Reviewer #1:**

**Remark 1.** On the page 4 it is written: "Figure 4 shows the ST and LT contributions in total change of σ(t). One can see that temperature dependencies of ST and LT fraction are opposite". However, the authors state only an experimental fact, but do not explain theoretically the corresponding temperature dependencies. Moreover, they don't explain why the distance between two points (one on the curve 1 and other on the curve 2) is three times less when exposed to ultrasound, for example, at T = 200 K (Fig. 4), than in the absence of the US irradiation.

**Remark 1**А. "Figure 4 shows the ST and LT contributions in total change of σ(t). One can see that temperature dependencies of ST and LT fraction are opposite". However, the authors state only an experimental fact, but do not explain theoretically the corresponding temperature dependencies.

**Answer.** The course of the curves in Figs. 3a,b and, respectively, in Figs. 4a,b, which are constructed on the basis of the experimental dependencies of Figs. 3a,b, is generally of a qualitative nature. It is not possible to describe these dependencies theoretically, since, as shown in the text of the article on pages 4-6, they are determined by the different mechanisms of AI changes ∆σUS*s* та ∆σUS*l*. Moreover, it is not possible to accurately determine the specific contribution of each of them in the whole temperature interval on the basis of experimental data.

**Remark 1**Б. Moreover, they don't explain why the distance between two points (one on the curve 1 and other on the curve 2) is three times less when exposed to ultrasound, for example, at T = 200 K (Fig. 4), than in the absence of the US irradiation.

**Answer.** Note that, as shown in Fig. 2a,b ∆σ0*s* ≠∆σUS*s*, ∆σ0*l* ≠ ∆σUS*l*. although for the ideal experiment, the above equations must be realized. In our opinion, the reason is some methodological disadvantages inherent in our experimental setup: а) The temperature fluctuations δТ due to ultrasonic heating ranged from 0.1 to 4 K in separate σ(t) time dependence measurement; moreover, due to the different duration of the measurement of relaxation σ(t) when the US is switched on and off, it can also be accompanied by different temperature variations; в) Because of the 0.6s discreteness, the first one (after switching on / off the ultrasound) the measurement can be randomly slightly offset in each case, which may differ slightly in the value of σ (t).

So, this raises a legitimate question - could the measured change in the conductivity be due to some kind of experimental error introduced by the temperature fluctuations? Indeed, such temperature fluctuations somewhat distort the ideality and correlation of the experimental curves. Let us analyze the maximum magnitude of these possible changes σ (t) as a result of uncontrolled temperature variation. From Fig.1a we estimate the steepness of curves 1 and 2: (∂σ0/∂Т) ≈2((Ohm·m)·K)-1 and (∂σUS /∂Т) ≈ 0,6((Ohm·m)·K)-1. Therefore, at max temperature fluctuations δT ~ 4K, fluctuations of δσUS ≤2.4 (Ohm•m)-1 аnd δσ0≤8(Ohm•m)-1 are possible. At the same time, the AI changes σ (t) reach (30-100) (Ohm•m)-1 - Fig. 3, which significantly exceed the possible δσUS,0. That is, Figures 3 and 4 are generally of a qualitative nature, but the facts are well established: a) that the temperature dependencies of a ST and LT fraction are opposite (Fig. 4) and b)the correlation of the nature of temperature AI ST with changes δn / δσ and LT - with corresponding temperature changes δµ / δσ (Fig. 5) - allowed to make a very important conclusion to associate acoustically induced concentration effects mainly with "instantaneous" ∆σ0,US s (t) changes and AI effects of mobility changes mostly with “long-term and ∆σ0, USl ones.

**Remark 2.** On page 5: "These may be, in particular, metastable centers changing the charge Jahn-Teller effect) [15, 16} (due to their lattice position (orientation) change." However, "changing the charge" is only a consequence but not the Jahn-Teller effect itself сonsisting in transition of a high-symmetry molecular system having electronic degeneracy of energy levels to a low-symmetry configuration of its constituent atoms. The identification of the lattice "position" with its "orientation" might mislead the JEMS readers regarding the Jahn-Teller theorem.

**Answer.** We agree with this observation. The problem of identifying the mechanism requires further study. Instead this sentence*«…These may be, in particular, metastable centers changing the charge Jahn-Teller effect) [15, 16} (due to their lattice position (orientation change…"*has been replaced next **: *“…****These may be, in particular, АІ transformation of DX centers into a metastable state at low temperatures**[15,16]»****.***

The corresponding references [15,16] are also replaced.

Прибрати (Jahn-Teller effect) [15, 16}, та замінити посилання на метастабільні центри, [**Journal of Crystal Growth**](https://www.sciencedirect.com/science/journal/00220248) [Volume 159, Issues 1–4](https://www.sciencedirect.com/science/journal/00220248/159/1), 2 February 1996, Pages 345-349 **DX centres in CdZnTe:Cl and their applications**

**Remark 3.** In the discussion of "the difference between AC and PC" (page 5) (AC and PC being, respectively, the acoustic conductivity and the photoconductivity), it would be necessary to indicate whether excitons arise under experimental conditions for measuring the photoconductivity. In the presence of excitons, it is necessary to exclude the carriers bounded in excitons from the carrier scattering processes.

**Answer.** Excitons have not arised under our experimental conditions (T˃80K).

Reviewer #2:

**Remark** 1. References 1 and 6 in the paper's references list are the same.

**Answer.** We agree with this observation. The corresponding references [6] are replaced.

**Remark** 2a. The authors should provide in the Experimental Section of the paper with a few more details about the kind of experimental system they used to measure the time dependence of the electrical conductivity: σ(t). They mention in the paragraph about relaxation of conductivity when the ultrasound is switched on/off (lines 42-44 on page 3) (also shown in Figures 2(a) and (b)) that they measured a "jump" of the conductivity which occurred within a time of less than 0.6 s but it seems a bit unreal that an experimental system can measure the conductivity so fast within a time of even less than a 1 s; within this time of 0.6 s the current source will have to send the current to the sample, apply the magnetic field and measure the Hall voltage, and all these should happen in a time of less than 0.6s!

**Answer.** Two independent measurement cycles should be separated.

1. Measurement of concentration *n*(*T*) and the mobility µH(*T*) by the Hall method in the mode of constant electric and magnetic fields. The measurement accuracy of electric signals under the ultrasound loading was up to 2% and that of temperature about 0.1 K. The accuracy of the Hall coefficient RH and the conductivity σ calculation is (3-5)%. The sample temperature variation under the intensive US loading in the course of the measurement of a separate experimental point (duration of measurement ≤1 min) did not exceed ~2 K.

2. Measurement of σ(*t*) relaxation dependences under switching on/off the US load using a digital multimeter and a related PC. We have performed dynamic study of σ(*t*) by steps of ~0.6 s. Note that at such relatively long (5-10 min) measurementsin separate time dependence σ(*t*) the temperature fluctuations δ*Т* due to ultrasonic heating ranged from 0.1 to 4 K; we fixed δ*Т* for each relaxation dependence and then took it into account as correction in the quantitative calculations of σ(*t*).

**Remark** 2b. They also mention that the fluctuations in the sample temperature in the cryostat was from 0.1 to 4 K: could the measured change of the conductivity be due to some kind of experimental error introduced by the temperature fluctuations?

**Answer.** So, this raises a legitimate question - could the measured change in the conductivity be due to some kind of experimental error introduced by the temperature fluctuations? Indeed, such temperature fluctuations somewhat distort the ideality and correlation of the experimental curves. Let us analyze the maximum magnitude of these possible changes σ (t) as a result of uncontrolled temperature variation. From Fig.1a we estimate the steepness of curves 1 and 2: (∂σ0/∂Т) ≈2((Ohm·m)·K)-1 and (∂σUS /∂Т) ≈ 0,6((Ohm·m)·K)-1. Therefore, at max temperature fluctuations δT ~ 4K, fluctuations of δσUS ≤2.4 (Ohm•m)-1 аnd δσ0≤8(Ohm•m)-1 are possible. At the same time, the AI changes σ (t) reach (30-100) (Ohm•m)-1 - Fig. 3, which significantly exceed the possible δσUS,0.

**Remark** 3. It is not clear how the authors arrived from the data of Figures 4 and 5 at the conclusion stated in lines 38-42 on page 4 that the process for the ST relaxation of the σ(T) is due to acoustic concentration effects or the LT to the AI changes in mobility.

**Answer.** Comparison of Fig. 4a,b and Fig. 5 shows a clear correlation of the nature of the temperature dependences of the corresponding curves - (curves 1 on Fig.4a,b with curve 1 on Fig.5) and (curves 2 on Fig.4a,b with curve 2 on Fig.5), accordingly. These allowed to make a very important conclusion to associate acoustically induced concentration effect mainly with "instantaneous" ∆σ0,US s (t) changes and AI effect of mobility changes mostly with “long-term” ∆σ0,USl ones.

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**Власенко О.І., Оліх Я.М., Савкіна Р.К. Особливості динамічного впливу ультразвуку на електрофізичні параметри напівпровідникових кристалів Cd*x*Hg1*-x*Te (*x*=0,2) // УФЖ. 1999. Т.44, №5. –С. 618-621.**

**Olikh Y.M., Savkina R.K., Vlasenko O.I. Acoustodynamic transformation of the defect structure in Hg1*-x*Cd*x*Te alloys // Semicond.Phys.Qunt.Electr.Optoelectr. 2000. V.3, No.3. – P.304-307.**