Review of: "Classical Explanation of Absorption Spectra"

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The author raises the question of the structure of atoms and its connection with the observed effect of absorption of photons by atoms without recourse to quantum mechanics. The proposed model challenges the established views in physics, and therefore the author should rigorously justify his position. Overall, I agree with the comments of other reviewers in that the article is seriously lacking in formulas and figures to substantiate the article's arguments and make them easier for readers to understand. In addition, I have a few more comments.

«Now, no matter how long the light through window W1 is put on the gas, there will be no difference in the absorption spectra, i.e. the black line will remain.»

The statement that the absorption will always be constant (there will be no saturation) is not true in the general case. Depending on various parameters of the problem, such as the intensity of the incident light, the size of the chamber, the number of atoms (gas pressure), and the lifetime of the excited state of the atom, it is possible to observe the effect of saturation of absorption. For example, if the rate of radiationless relaxation of excited atoms is high, which can occur, for example, in a small gas chamber when excited atoms relax through collisions with the walls of the chamber, the energy is lost for heating of the walls. In such a case, the absorption will not be exactly equal to zero, but may become barely recognizable in the spectrum of the detected light (there will be no black line).

«But since the surface area of the windows is much less than the surface area of the wall, the number of photons exiting the window W1 will not affect the results of the experiment very much.»

It does not matter how small the windows of the chamber are, because if we neglect losses of photons inside the chamber, sooner or later the flux of incoming photons will be equal to the flux of outgoing photons, since the flux of outgoing photons is directly proportional to the number of photons inside the chamber. The size of the windows affects only the total number of photons inside the chamber at each moment of time after the equilibrium of incoming and outgoing photons is established. Thus, there will be no infinite accumulation of photons inside the chamber and no inevitable constant excitation of all gas atoms in the chamber. If we take into account irreversible losses of photons inside the chamber (for example, the radiationless relaxation of atoms at collision with the chamber walls), the flux of incoming photons will be equal to the flux of outgoing photons plus the rate of irreversible losses, and that does not affect the previous conclusion. Thus, the photon flux from neither window can be neglected. For example, if the windows have the same size, then approximately half of the re-emitted photons will exit through window W1 and won't reach the detector.

Besides, it is not quite clear from the problem statement whether the experimenter is able to register all photons coming out of window W2 or only those coming out in a small range of angles relative to the direction of the incident beam. Since the re-emitted photons will exit over a wide range of angles due to the random direction of re-emission, in the second case, there will be a significant decrease in the photons reaching the detector, which increases the chances of observing a black line in the spectrum. If Figure 1 is taken literally, it describes exactly the second case.

«But experience so far suggests that the black line in the absorption spectra will remain constant no matter how long white light is thrown on the gas.»

Here, the author should refer to specific experimental data, since it is possible to perform a different experiment in which the absorption line disappears, or at least is significantly suppressed.

«This is against the law of energy conservation, and there is no explanation anywhere, and hardly anyone seems to be thinking about why this is happening.»

Again, there is no violation of the law of conservation of energy here, if we take into account all channels of energy loss, including radiationless ones, and also the fact that not all photons reach the detector.

«If there is a positive core between them as a nucleus, the net attractive force between the nucleus and the electrons and the net electric and magnetic repulsion between the electrons and electrons can be balanced, and these two electrons can be fixed at a certain distance from the nucleus, which can be called the spin atomic model, which further must be refined.»

The author insists that electrons do not move in orbits around the nucleus, explaining that electrons repel each other, compensating for the attraction of the nucleus. But there is only one electron in a hydrogen atom, and so I don't understand what counteracts the attraction of the nucleus if we dismiss the orbital and cloud models of the atom.

In conclusion, I recommend a significant revision of the proposed model and the article itself.