

The Cavendish square the circle.

Westerners Howie and Josephson agree with southerner Pepper.

There is no anomaly!

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Dear Mr. Catt,

Thank you for your letter and your book. I found the contents very interesting, but am afraid I have to disagree with you with regard to your assertion: "Where does this new charge come from? ... not from somewhere to the left, as such charge would have to travel at the speed of light in a vacuum." This assertion may be 'obvious to the untutored mind', is in fact incorrect.

This was argued by McBwan, but it may be easier to follow the argument if we move from the arena of electrons in a metal to the more visualisable one of boats on the Cam. Imagine we have a series of stationary boats, with uniform spacing d . At time t_0 a pistol is fired, and each crew when it hears the pistol starts moving with velocity v (we assume for simplicity, unphysically, that the boats accelerate instantaneously to this velocity; the outcome is the same whether we assume this or not).

Each crew hears the pistol going a time d/c earlier than do the crew of the boat next in front, c being the velocity of sound, and they move forward a distance dv/c in this time. The spacing of the boats thus changes from d to $d - v/c$ as the sound pulse passes. An observer in an (aero)plane overhead would see a density discontinuity (smoothed out in the real case where the boats take time to get going), with the front moving with velocity c , since it is driven by the sound of the starting pistol.

If we change sound wave (pulse) to electromagnetic pulse, and boats to electrons, we get the situation of your 'anomaly'. It is no more necessary for the electrons to travel at the speed of light for the front to travel at the speed of light than it is for the boats to travel at the speed of sound for the front to travel at that speed: what is necessary is for there be a way for the guiding information to travel rapidly.

I contacted Prof. Pepper about this and enclose the email I sent him since it includes a more detailed analysis. He told me that he had been under the impression that you were talking about a waveguide not a transmission line, and had addressed his comments to that situation (he makes this impression as to what the issue is quite clear in the letter from him that you reproduce, hence I think your comments on this letter are rather aimed at the wrong target).

In any event, the upshot after discussion with Pepper seems to be that all three 'experts' at the Cavendish are currently in agreement (here I am guessing what Howie said, since you do not give details).

I am afraid that from my analysis there is no Catt anomaly (disagreement with