From: Ivor Catt

Sent: Monday, November 11, 2013 3:14 PM

To: Rosenstark, Solomon

Cc: Alex Yakovlev

Subject: lattice diagram

Dear Professor Sol Rosenstark,
Again re your 1994 book http://www.amazon.com/Transmission-Lines-Computer-Engineering-Rosenstark/dp/0070539537

p51, Problems. P2.13. “The transmission line shown in the pulse forming connection of figure 2.34 has Zo=50 ohms. The line is first charged to V volts. The switch is closed at t=0. Analyse the resultant transient problem using a lattice diagram. The line has a length l and the speed of propagation is v. How can the duration of the pulse be doubled?

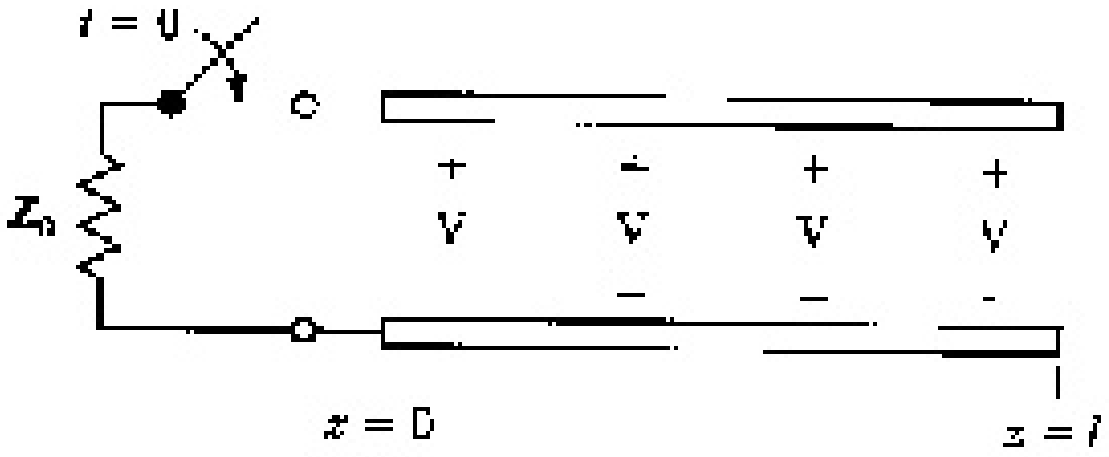

Figure 2.34 A pulse forming network.

My question to you is, “How can the duration of the pulse be doubled?”

Since this is an unusual request, but your response very important, if you give me your address I will send you a cheque for $200 drawn on a US bank to recompense you for your troubles.

Yours sincerely,
Ivor Catt

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From: Rosenstark, Solomon

Sent: Tuesday, November 12, 2013 3:00 PM

To: Ivor Catt

Subject: Re: doubled duration of pulse

The length of the transmission line determines the duration of the pulse, that being twice the length of the line divided by the speed on the line. So the answer is: simply double the length of the line.

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From: Ivor Catt

Sent: Tuesday, November 12, 2013 3:47 PM

To: Rosenstark, Solomon

Cc: Alex Yakovlev

Subject: doubled duration of pulse

Dear Professor Sol Rosenstark,

Question 2.13; “How can the duration of the pulse be doubled?” – SR

Answer; “So the answer is: simply double the length of the line.” – SR

Please try again.

Ivor Catt

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From: Ivor Catt

Sent: Wednesday, November 13, 2013 3:41 PM

To: Dr. D.S. Walton

Cc: Alex Yakovlev ; rosenstark@njit.edu

Subject: double length

Dave,

http://www.ivorcatt.co.uk/x3bb2.pdf

p51

Question 2.13; "How can the duration of the pulse be doubled?" – SR

Answer; "So the answer is: simply double the length of the line." – SR

Professor Alex Yakovlev and I then I misinterpreted this to mean Rosenstark knew that the output pulse is twice the length of the line. There is no evidence that he knows this.

Previous to this in his book, up to p50, Rosenstark discusses a battery or logic gate connected and switched into (uncharged) transmission lines in various arrangements – connected in series, connected in parallel, etc. There is no discussion of the discharge of a previously charged capacitor (replacing the battery as the source of energy).

Then at the end of Chapter 2 on p50 and then p51 there are "problems". These should be to test the student on whether he has read and grasped the chapter. However, in the case of this Problem 2.13, he did not do what he should have done. Here he tests the student on something that he does not teach in the chapter. Reading Problem 2.13, with mention of double length pulse, "**How can the duration of the pulse be doubled?",** not **"Why is the duration of the output pulse doubled?"**, Alex wrongly assumed that Chapter 2 had discussed the (double) length of output of the pulse from a discharging capacitor, but it does not. There is no evidence that the author Rosenstark knows what is the length of output pulse from a charged capacitor, which the Tektronic 1963 manual http://www.ivorcatt.co.uk/x212.pdf says is double length. The author's mention of "Doubled" is just an unfortunate coincidence, leading to Alex Yakovlev's confusion.

In my April 2013 article http://www.ivorcatt.co.uk/x343.pdf I say; "It seems that since I used [the Tek 109 pulse generator] 49 years ago, nobody else has pondered the significance of the half-size double length pulse." The author Rosenstark has not pondered it, and probably doesn't know it. (He has written that he wished he had known by 1967 paper http://www.ivorcatt.co.uk/x0305.htm . "Nice work. Alas, I didn't know about it at the time. Had that been the case, then it would have my job easier.") Thus, it remains true that nobody else has pondered the double length output.

In “Problem 2.13”, which is about the discharge of a previously charged coaxial cable, Rosenstark says; “Analyse the resultant transient problem using a lattice diagram.” However, “Lattice Diagrams” are not useful when investigating the discharge of a previously charged coaxial cable. Rosenstark introduces them on page 25, and refers to a circuit where a battery is connected to an uncharged coaxial cable. He does not propose the use of a lattice diagram to investigate the behaviour of the battery; how it is able to immediately deliver voltage V and current iZo, and continue to do so. Similarly, a lattice diagram will not help to work out how a charged capacitor will deliver output. The charged capacitor takes over the role of the battery, not of the uncharged transmission line.

Ivor Catt

From: Alex Yakovlev

Sent: Friday, October 25, 2013 6:44 PM

To: Alex Yakovlev ; 'Ivor Catt' ; 'David Walton' ; 'Malcolm Davidson'

Cc: 'Mike Gibson'

Subject: RE: Wakefield

Ivor

In this PDF below, you might have a look at the exercises, for example: p.51, exercise P2.13.

Isn’t it exactly the spec of the Wakefield 1 experiment?

Alex