

CircuitMaker Step Time puzzle

Source: <http://sci.tech-archive.net/Archive/sci.electronics.design/2004-11/7175.html>

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Any CircuitMaker users have any thoughts on this puzzle please?
I've been running the simple CMOS astable at
<http://www.terrypin.dial.pipex.com/Images/TestCursors.CKT>

I know the 1k resistor is far too low (330k would be good), but that's not the point of my post.

At certain settings of Step Time (= Max Step), the waveform is not identical from one cycle to the next.

One such critical value is 1 ms. With that chosen, successive Lows differ significantly in length. I've illustrated the 1 ms result here:
<http://www.terrypin.dial.pipex.com/Images/CM-StepTimePuzzle1.gif>

You can clearly see the variation in successive cycles. I measured about 4.3 ms versus 5.4 ms, while the Highs remain identical at 5.0 ms.

So, depending on which choice of cycle I happen to make, I get a different frequency: 97 Hz versus 104 Hz. Yet at 990 us (i.e. only a tiny difference), I get a *consistent* waveform and hence a consistent frequency measurement (97 Hz). But at Step = 100 us, I also get a consistent frequency, but now it's 114 Hz.

Any insights appreciated please.

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