
Subject: Re: modulo reset

Posted by [James Kuyper](#) on Tue, 23 Nov 2004 18:51:30 GMT

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Ralf Schaa wrote:

...

- > I am reading binary data (not longer than 32 bit, and I store it in ULL
- > as suggested)
- > and the 'modulo reset' I talked about may appear at one datafield: that
- > is in an accumulated
- > "Doppler" cycle count.
- > By differentiating with respect to time, one can get the true doppler
- > count.

"Differencing", not "Differentiating". You differentiate a continuous function of time. For a discontinuously sampled function, you can't differentiate, you can only calculate finite differences.

- > Than the documentation says, when a modula reset occurs , add 2^{32} .
- > I think, this means when the counter is full and is starting with zero
- > again. than add the 2^{32} .
- > But I don't see what adding 2^{32} exactly would do ...

Let's assume that the current cycle count is $t_0=2^{32}-5$. 20 cyles later the true count would be $2^{32}+15$. However, because it reset at 2^{32} , the actual number in the cycle count would be $t_1=15$. If you calculate the time difference as $dt = t_1-t_2$ while storing the value in, for instance, a 64 byte integer or floating point type, then the dt will be $15-(2^{32}-5) = 20-2^{32}$. To get the correct number of cycles, you have to add in 2^{32} , leaving you with $dt = 20$.
