
Subject: Time stamps in MCEventHeader

Posted by [Mohammad Al-Turany](#) on Thu, 15 May 2008 07:57:27 GMT

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Hi,

I added time stamps to the MCEventHeader (r 2772), to use this in the simulation macro:

```
CbmPrimaryGenerator* primGen = new CbmPrimaryGenerator();  
primGen->SetEventTimeInterval ( minTime, maxTime) ;
```

the event time will be a random number between minTime and maxTime in nano seconds, it will also be added for each event, i.e: each event will have the time of all previous events+ its own one!

regards

Mohammad

Subject: Re: Time stamps in MCEventHeader

Posted by [Tobias Stockmanns](#) on Thu, 15 May 2008 08:10:45 GMT

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Very good!

What is the random generator you use?

I think it should be a random distribution.

Cheers,

Tobias

Subject: Re: Time stamps in MCEventHeader

Posted by [Mohammad Al-Turany](#) on Thu, 15 May 2008 08:24:30 GMT

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Hi,

I use:

```
TRandom::Uniform(min, max)
```

is this enough or should we change it! or should the user have the possibility to choose the

Random generator?

Mohammad

Subject: Re: Time stamps in MCEventHeader
Posted by [Tobias Stockmanns](#) on Fri, 16 May 2008 06:23:17 GMT
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Hi Mohammad,

it should be an exponential function with the mean time between events (100 ns) as parameter

Subject: Re: Time stamps in MCEventHeader
Posted by [Mohammad Al-Turany](#) on Fri, 16 May 2008 06:38:13 GMT
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Hi,

Can you explain me in more details what do you mean by this! do you mean the random distribution or the the time it self?

Mohammad

Subject: Re: Time stamps in MCEventHeader
Posted by [Tobias Stockmanns](#) on Fri, 16 May 2008 11:00:26 GMT
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Hi Mohammad,

the probability distribution of time intervals between two consecutive events is given by: $P(t) = 1/\text{meantime} * \exp(-1/\text{meantime} * t)$.

The meantime should be a free parameter (typically 100 ns).

I hope this clarifies it.

Have a nice weekend

Tobias

Subject: Re: Time stamps in MCEventHeader
Posted by [Mohammad Al-Turany](#) on Mon, 19 May 2008 18:41:18 GMT
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Hi,

So, I added a new method SetEventMeanTime(Double_t) to the CbmPrimaryGenerator, setting this value will create a TF1 function:

```
TF1 *f1 = TF1("f1", "1/meanTime * Exp (-t/meanTime)", 0, meanTime*10 )
```

Then the event time is taken randomly from this distribution (f1->GetRandom()) and will be added for each event!

Please test it and let me know!

regards

Mohammad

Subject: Re: Time stamps in MCEventHeader
Posted by [Oscar Reinecke](#) on Wed, 21 May 2008 13:34:04 GMT
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Hi Mohammad,

Or you could use TRandom::Exp(Double_t tau), that does exactly the same faster.

Greetings

Oscar

Subject: Re: Time stamps in MCEventHeader
Posted by [StefanoSpataro](#) on Wed, 21 May 2008 15:26:06 GMT
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Maybe one could just give a TF1 function as parameter, so that the user can set whichever distribution he likes.

Subject: Re: Time stamps in MCEventHeader
Posted by [Mohammad Al-Turany](#) on Fri, 23 May 2008 10:03:48 GMT
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Hallo Oscar,

You are right, it gives the same results! it is not faster but more simple! so now we have two methods:

1. SetEventMeanTime(Double_t)
2. SetEventTimeInterval (minTime, maxTime) ;

do we need a very general one as Stefano suggested !

regards

Mohammad
