
Subject: vectorized RK4

Posted by [news.qwest.net](#) on Thu, 09 Nov 2006 17:17:20 GMT

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I'm looking at a problem where we have to calculate a Runge Kutta solution for a number of particles.

From some reading I did, I thought I could vectorize the RK4 call over the number of particles.

From the help example, we have the following call,
> RK4(Y, allders, X, H, 'differential',/double)

For a single particle

x = 0.0

y = [4.0,6.0]

allders is a 2 element array

H = 0.5

"differential" is a defined function returns a 2 element array.

So, how does one go about vectorizing this for 1000 particles?

Is that possible?

I cannot just pass in vectors for x and y

(and of course have the appropriate differential function)

Cheers,

bob

Subject: Re: vectorized RK4

Posted by [Kenneth Bowman](#) on Tue, 21 Nov 2006 16:50:43 GMT

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In article <45536299\$0\$498\$815e3792@news.qwest.net>,

"R.G. Stockwell" <no@email.please> wrote:

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> a Runge Kutta solution for a number of particles.

>

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> Is that possible?
> I cannot just pass in vectors for x and y
> (and of course have the appropriate differential function)
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>
> Cheers,
> bob

Bob,

You may have already solved this, but if not, RK4 is simple enough to code yourself. You lose a little flexibility, but you can vectorize across particles.

Ken Bowman

Subject: Re: vectorized RK4

Posted by news.qwest.net on Tue, 21 Nov 2006 17:49:29 GMT

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"Kenneth Bowman" <k-bowman@tamu.edu> wrote in message
news:k-bowman-EF0484.10504321112006@news-new.tamu.edu...

> In article <45536299\$0\$498\$815e3792@news.qwest.net>,
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>
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>
> Ken Bowman

Thanks, yeah the problem has been addressed (did it in fortran for a speed up of approximately infinity, lol). This application was calling the routine thousands of times, and it was very slow.

Actually I was confused about some posts I found in google groups saying that one could vectorize across particles, and I had mistakenly assumed it referred to the rk4 procedure that comes with IDL. So I had wasted some time fiddling with it, trying to make it accept arrays and stuff before realizing that the posts must have been referring to a

different
routine. (in fact I think it was an old message of yours that I had seen.)

Thanks for the response!

Cheers,
bob
