Subject: vectorized RK4
Posted by news.qwest.net on Thu, 09 Nov 2006 17:17:20 GMT
View Forum Message <> Reply to Message

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
View Forum Message <> Reply to Message

In article <45536299$0$498$815e3792@news.qwest.net>,
 "R.G. Stockwell" <no@email.please> wrote:

> 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

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
View Forum Message <> Reply to Message

"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>,
> 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

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
