

Re: approximation by series expansion

Source: <http://sci.tech--archive.net/Archive/sci.math/2007-08/msg02795.html>

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 - *Date:* Fri, 17 Aug 2007 17:59:01 +0200
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@Robert Israel

Sorry, for my delayed response. Time shift between Germany and Vancouver seems to be considerable.

And sorry for my inexactness. But your interpretation was right.

I wanted to approximate

$1/(a-x) = 1/(a-\cos(\theta))$ in the region $x=[0..1]$, where $a>1$ is a parameter.

And I wanted a reasonable good approximation for arbitrary a in the entire interval of x .

The taylor expansion usually fails on one end of the intervall and when you fix it to both ends it fails in the middle ...

Chebyshev approximation is really quite good. (I remember, that I did consider it before)

However I will face the problem that I have to evaluate the integral for the coefficient.

I will have to do this in each step of my numerical simulation, since a changes everytime.

But maybe I can use this Clenshaw-Curtis quadrature formulae for the coefficients (http://en.wikipedia.org/wiki/Clenshaw-Curtis_quadrature).

Then I can even get a simple algebraic expression in terms of parameter a .

Up to now I don't understand how I can calculate the "Nyquist frequency" for my problem, that is what N will be in this formula on wikipedia.

Thank you for your help!

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