
Subject: Re: better atan function?

Posted by [Liam E. Gumley](#) on Thu, 01 Jun 2000 07:00:00 GMT

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bjackel@phys.ucalgary.ca wrote:

>
> Hi Bob
>
> Hmm. A couple minutes playing with atan gives the following:
>
> IDL> help,atan(1.0d-12,1.0d0)
> <Expression> DOUBLE = 1.0000000e-012
>
> IDL> help,atan(1.0d-15,1.0d0)
> <Expression> DOUBLE = 1.0000000e-015
>
> IDL> help,!dpi/2.0d0 - atan(1.0d0,1.0d-12)
> <Expression> DOUBLE = 9.9986686e-013
>
> IDL> help,!dpi/2.0d0 - atan(1.0d0,1.0d-15)
> <Expression> DOUBLE = 8.8817842e-016
>
> So the small angle stuff is essentially perfect. The error
> at large angles is almost certainly due to subtracting two
> nearly equal quantities. This of course doesn't rule out
> something funny for moderate angles, but it'd be surprising.

Some interesting observations on computing elementary functions are
available at

<http://math.nist.gov/javanumerics/reports/jgfnwg-02.html#App endix-3>

Cheers,

Liam.

<http://cimss.ssec.wisc.edu/~gumley>
