Subject: Re: atan in IDL 5.5
Posted by Richard Younger on Tue, 04 Jun 2002 14:17:58 GMT
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Zoe Dent wrote:
>
> I'm having problems with the 'atan' function in IDL 5.5. I have a
> program which reads in an array of complex numbers, so an array of
> single numbers should be produced, but in fact another complex array
> os produced. At the command-line the atan of a set of complex numbers
> produces a single number. I have disabled the multi-threading option
> with no effect. I'd appreciate any advice on this matter.

Zoe,

I think your problem is that RSI changed the behavior of ATAN in IDL 5.5. It used to be that IDL through 5.4 interpreted the arctangent of a complex number as the the phase angle of that complex number, namely, ArcTan(imag/real). when I switched to 5.5, I found a new "feature" in the What's New that said something like 'Trigonometric functions now handle complex values!' This means that you now have to explicitly separate the complex and real parts to get the phase angle, which was a bit of a nuisance to find and replace. E.G.:

```
a = complex(1.0, -0.5)
phase = ATAN(Imaginary(a),Real_Part(a))
```

I don't know about the command line producing different numbers. It seems to work fine for me. At the command line, I get

```
IDL> print, !version
{ x86 Win32 Windows Microsoft Windows 5.5 Aug 28 2001      32      64}

IDL> a = complex(1.0, -0.5)
IDL> help, atan(a)
<Expression>    COMPLEX   = (     0.847576,    -0.238878)
IDL> help,  ATAN(Imaginary(a),Real_Part(a))
<Expression>    FLOAT     =     -0.463648
```

Best,
Rich

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Richard Younger

Subject: Re: atan in IDL 5.5

Posted by Randall Skelton on Tue, 04 Jun 2002 15:08:50 GMT
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Hi Zoe,

I am not sure I understand what you are trying to do. Can you please post a snipit of code that demonstrates the problem you are having?

> I have a program which reads in an array of complex numbers, so an array
> of single numbers should be produced, but in fact another complex array os
> produced.

If you have complex numbers why are you expecting "an array of single numbers" to be produced? What is your code doing?

> At the command-line the atan of a set of complex numbers
> produces a single number.

I disagree. If you give a complex value to atan, you will get a complex number back.

```
IDL> a = complex(0.5,0.5)
IDL> help, a
A               COMPLEX   = (     0.500000,     0.500000)
IDL> print, atan(a)
(     0.553574,     0.402359)
```

> I have disabled the multi-threading option with no effect.

This is a quantum leap... I have no idea what you are trying to do.

Cheers,
Randall

On Tue, 4 Jun 2002, Zoe Dent wrote:

> I'm having problems with the 'atan' function in IDL 5.5. I have a
> program which reads in an array of complex numbers, so an array of
> single numbers should be produced, but in fact another complex array os
> produced. At the command-line the atan of a set of complex numbers
> produces a single number. I have disabled the multi-threading option
> with no effect. I'd appreciate any advice on this matter.
>
> Many thanks,
>
> Zoe

Subject: Re: atan in IDL 5.5
Posted by Craig Markwardt on Tue, 04 Jun 2002 16:13:43 GMT
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Zoe Dent <zoe@aurora.york.ac.uk> writes:

> ----------1F130981AB8092C521F2309C
> Content-Type: text/plain; charset=us-ascii
> Content-Transfer-Encoding: 7bit
>
> I'm having problems with the 'atan' function in IDL 5.5. I have a
> program which reads in an array of complex numbers, so an array of
> single numbers should be produced, but in fact another complex array os
> produced. At the command-line the atan of a set of complex numbers
> produces a single number. I have disabled the multi-threading option
> with no effect. I'd appreciate any advice on this matter.

Right, I used to rely on this too, but RSI made this change pretty
obvious in their release notes, as the others have pointed out. It's
a pity since the original ATAN behavior will be faster than the new
way to do it. That's why I use the following utility function,
ZCOMPARG. I set it and forget it.

Craig

```
function zcomparg, z

  forward_function atan, real_part, imaginary
  common zcomparg_common, atanver
  if n_elements(atanver) EQ 0 then begin
     if !version.release LT '5.5' then atanver = 1 $
     else                              atanver = 2
  endif

  if atanver EQ 1 then return, atan(z) $
  else                 return, atan(imaginary(z), real_part(z))

end
```

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Craig B. Markwardt, Ph.D.  EMAIL:  craigmnet@cow.physics.wisc.edu
Astrophysics, IDL, Finance, Derivatives | Remove "net" for better response
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