

NAME

carg, cargf, cargl – calculate the complex argument

LIBRARY

Math library (*libm*, *-lm*)

SYNOPSIS

```
#include <complex.h>
```

```
double carg(double complex z);
```

```
float cargf(float complex z);
```

```
long double cargl(long double complex z);
```

DESCRIPTION

These functions calculate the complex argument (also called phase angle) of z , with a branch cut along the negative real axis.

A complex number can be described by two real coordinates. One may use rectangular coordinates and gets

$$z = x + i * y$$

where $x = \text{creal}(z)$ and $y = \text{cimag}(z)$.

Or one may use polar coordinates and gets

$$z = r * \text{cexp}(i * a)$$

where $r = \text{cabs}(z)$ is the "radius", the "modulus", the absolute value of z , and $a = \text{carg}(z)$ is the "phase angle", the argument of z .

One has:

$$\tan(\text{carg}(z)) = \text{cimag}(z) / \text{creal}(z)$$

RETURN VALUE

The return value is in the range of $[-\pi, \pi]$.

ATTRIBUTES

For an explanation of the terms used in this section, see **attributes(7)**.

Interface	Attribute	Value
carg() , cargf() , cargl()	Thread safety	MT-Safe

STANDARDS

C11, POSIX.1-2008.

HISTORY

glibc 2.1. C99, POSIX.1-2001.

SEE ALSO

cabs(3), **complex(7)**