

NAG Library Function Document

nag_complex_safe_small_number (X02ANC)

1 Purpose

nag_complex_safe_small_number (X02ANC) returns the **safe range** of complex floating-point arithmetic.

2 Specification

```
#include <nag.h>
#include <nagx02.h>
double nag_complex_safe_small_number
```

3 Description

nag_complex_safe_small_number (X02ANC) is a constant defined in the C Header file.

nag_complex_safe_small_number (X02ANC) is defined to be the smallest positive model number z such that for any x in the range $[z, 1/z]$ the following can be computed without undue loss of accuracy, overflow, underflow or other error:

$$\begin{aligned} & -w \\ & 1/w \\ & -1/w \\ & \sqrt{w} \\ & \log(w) \\ & \exp(\log(w)) \\ & y^{(\log(w)/\log(y))} \text{ for any } y \\ & |w| \end{aligned}$$

where w is any of x , ix , $x + ix$, $1/x$, i/x , $1/x + i/x$, and i is the square root of -1 .

4 References

None.

5 Arguments

None.

6 Error Indicators and Warnings

None.

7 Accuracy

None.

8 Parallelism and Performance

nag_complex_safe_small_number (X02ANC) is not threaded in any implementation.

9 Further Comments

None.

10 Example

None.
