Author(s) : K.S. Kölbig
Submitter :
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Dilogarithm Function

Function subprograms `RDILOG` and `DDILOG` calculate the dilogarithm function

$$\mathrm{Li}_2(x) \;=\; -\int_0^x \frac{\ln|1-t|}{t}dt$$

for real arguments x.
On CDC and Cray computers, the double-precision version `DDILOG` is not available.

Structure:

`FUNCTION` subprograms
User Entry Names: `RDILOG`, `DDILOG`
Obsolete User Entry Names: `DILOG` $\equiv$ `RDILOG`

Usage:

In any arithmetic expression,

`RDILOG(X)` or `DDILOG(X)` has the value Li_2`(X)`,

where `RDILOG` is of type `REAL`, `DDILOG` is of type `DOUBLE PRECISION`, and `X` has the same type as the function name.

Method:

Approximation by truncated Chebyshev series and functional relations.

Accuracy:

`RDILOG` (except on CDC and Cray computers) has full single-precision accuracy. For most values of the argument `X`, `DDILOG` (and `RDILOG` on CDC and Cray computers) has an accuracy of approximately one significant digit less than the machine precision.

References:

1. Y.L. Luke, Mathematical functions and their approximations, (Academic Press, New York 1975) 67.

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