

NAG Library Routine Document

G05YGF

Note: before using this routine, please read the Users' Note for your implementation to check the interpretation of ***bold italicised*** terms and other implementation-dependent details.

1 Purpose

G05YGF initializes the Niederreiter generator. It must be called before using G05YHF and is required if a Niederreiter sequence is wanted from G05YJF or G05YKF.

2 Specification

```
SUBROUTINE G05YGF(IDIM, IREF, ISKIP, IFAIL)
  INTEGER          IDIM, IREF(2000), ISKIP, IFAIL
```

3 Description

G05YGF places vital initialization information into the array IREF for subsequent use by the generator routines.

4 References

None.

5 Parameters

- 1: IDIM – INTEGER *Input*
On entry: the number of dimensions required.
Constraint: $1 \leq \text{IDIM} \leq 40$.
- 2: IREF(2000) – INTEGER array *Output*
On exit: contains initialization information for use by the generator routines G05YJF, G05YKF and G05YMF. IREF must not be altered in any way between initialization and calls of the generator routines.
- 3: ISKIP – INTEGER *Input*
On entry: the number of terms of the sequence to skip on initialization.
Constraint: $\text{ISKIP} \leq 2^{15}$.
- 4: IFAIL – INTEGER *Input/Output*
On entry: IFAIL must be set to 0, -1 or 1. If you are unfamiliar with this parameter you should refer to Section 3.3 in the Essential Introduction for details.
On exit: IFAIL = 0 unless the routine detects an error (see Section 6).
 For environments where it might be inappropriate to halt program execution when an error is detected, the value -1 or 1 is recommended. If the output of error messages is undesirable, then the value 1 is recommended. Otherwise, if you are not familiar with this parameter, the recommended value is 0. **When the value -1 or 1 is used it is essential to test the value of IFAIL on exit.**

6 Error Indicators and Warnings

If on entry $IFAIL = 0$ or -1 , explanatory error messages are output on the current error message unit (as defined by X04AAF).

Errors or warnings detected by the routine:

$IFAIL = 1$

On entry, $IDIM < 1$ or $IDIM > 40$.

$IFAIL = 2$

The value of $ISKIP > 2^{15}$.

$IFAIL = 3$

A system error has occurred. Please contact NAG.

7 Accuracy

Not applicable.

8 Further Comments

None.

9 Example

See Section 9 in G05YHF.
