



1 SUMMARY

Given $x > 0$ computes values of all the **Bessel functions** $\text{ber}(x)$, $\text{bei}(x)$, $\text{ker}(x)$, $\text{kei}(x)$, $\text{ber}'(x)$, $\text{bei}'(x)$, $\text{ker}'(x)$, $\text{kei}'(x)$.

A Chebyshev series in x is used if $x \leq 10$ and a similar series in $\frac{1}{x}$ if $x > 10$, see, F.D. Burgoyne, Maths. Comp., Vol. 17, No. 83, 1963.

ATTRIBUTES — **Version:** 1.0.0. **Types:** FF06A; FF06AD. **Original date:** October 1964. **Origin:** S.Marlow, Harwell.

2 HOW TO USE THE PACKAGE

The single precision version

```
CALL FF06A(X,Y)
```

The double precision version

```
CALL FF06AD(X,Y)
```

X is a REAL (DOUBLE PRECISION in the D version) variable which must be set by the user to the value of the argument x . **Restrictions:** $x \geq 0$, but if $x=0$, then $\text{ber}(x)$ is set to 1, $\text{kei}(x)$ is set to $-\pi/4$, and the remaining functions set to zero. If $x < 0$, the calculation is performed with $|x|$.

Y is a REAL (DOUBLE PRECISION in the D version) array of length 8 which will be set by the subroutine to the eight function values. The computed values of $\text{ber}(x)$, $\text{bei}(x)$, $\text{ker}(x)$, $\text{kei}(x)$, $\text{ber}'(x)$, $\text{bei}'(x)$, $\text{ker}'(x)$, and $\text{kei}'(x)$ are stored in $Y(I)$, $I=1,8$.

3 GENERAL INFORMATION

Use of common: none.

Workspace: none.

Other subroutines: none.

Input/Output: none.

Restrictions:

$x \geq 0$.

Accuracies:

6 figs for 4-byte arithmetic.

8 figs. for $x \leq 10$, 6 figs. otherwise for 8-byte arithmetic

4 METHOD

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