Part 2—Using CXML Subprograms

4 Using the Level 1 BLAS Subprograms and Extensions

4.1

9.2.2

VLIB Routines

VCOS

Tables

Preface

- A manpage for each subprogram that provides details of its use and the operations it implements

Refer to the section of this Preface titled "Using Manpages" if you need

4 How CXML Achieves High Performance

CXML relies on the following design techniques to achieve high performance:

1

Preparing and Storing Program Data

Preparing and Storing Program Data

1.1 Data and Data Types

Preparing and Storing Program Data

For

Preparing and Storing Program Data

For example, element

4

Using the Level 1 BLAS Subprograms and Extensions

7

Using the Level 3 BLAS Subprograms

The Level 3 BLAS subprograms perform matrix-matrix operations commonly

8

Using LAPACK Subprograms

Using LAPACK Subprograms

6.

- The _APPLY subroutine uses the internal data structures to compute the FFT.
-

Table 9–15 (Cont.) Summary of Correlation Subroutines

Figure 9–3 Lowpass Nonrecursive Filter for Varying Wiggles

Table 9–17 Naming Conventions: Digital Filter Subroutines

Character Group	Mnemonic	Meaning
First group	S	Single-precision real data

10

Using the Iterative Solvers for Sparse Linear Systems

Table 10–7 (Cont.) Parameters for the SOLVER Subroutine

Argument

Using the Iterative Solvers for Sparse Linear Systems

Using the Iterative Solvers for Sparse Linear Systems

Using the Direct Solvers for Sparse Linear Systems

Using the Direct Solvers for Sparse Linear Systems

Using the Direct Solvers for Sparse Linear Systems

Using the Direct Solvers for Sparse Linear Systems

Using the Direct Solvers for Sparse Linear Systems

Using the Direct Solvers for Sparse Linear Systems

12.7 Error Handling

Using Sort Subprograms

Part 3—CXML Subprogram Reference

BLAS Level 1 Reference
SDOT DDOT DSDOT CDOTC ZDOTC CDOTU ZDOTU

Description

y

Example

If **incx**

SMIN DMIN

BLAS Level 1 Extensions Reference

Example

```
INTEGER*4
```

BLAS Level 1 Extensions Reference
SVCAL DVCAL CVCAL ZVCAL CSVCAL, ZDVCAL

Description

incx

integer*4

On entry, the increment for the array X.

If **incx** > 0, vector is stored forward in the array, so that

If **incy** 0, vector

BLAS Level 2 Reference

2.

Arguments

diag
character*1
On entry, specifies whether the matrix

BLAS Level 2 Reference

x
real*4 | real*8 | complex*8 | complex*16

trans

character*1

On entry, specifies the operation to be performed:

If **trans** = ′N′ or ′n

SGEMM DGEMM CGEMM ZGEMM
Matrix-Matrix Product and Addition (Serial and Parallel Versions)

Format

{S,D,C,Z}GEMM (transa, transb, m, n, k, alpha, a, lda, b, ldb, beta, c, ldc)

Arguments

transa
character*1

Example

Description

Example

```
REAL*4 A(20,20), B(30,40), C(30,50), ALPHA, BETA
M = 10
```

On exit, **c** is overwritten; the triangular part of the array C is overwritten by the

_FFT

stride_1_flag
logical
Specifies the allowed distance between consecutive elements in the input and

fft_struct

Example

```
INCLUDE 'DXMLDEF.FOR'
INTEGER*4 N_F, N_M, STATUS
```

Example

Description

- Biconjugate gradient method with right preconditioning:
  This is the bi-conjugate gradient method applied to:

  $$* \quad {}^{1} * \quad b$$

  where:

For the conjugate gradient squared method, with left preconditioning, the length of the real work space array, defined by the variable

---

DMATVEC_SDIATs 1 i ˛,1.8’á·È 1aKKKQ0 0 1efefeHHH= (It)7´9·ìàB

nz

integer*4

Arguments

n

integer*4Së¬;X .1ÅTj3 -

iwrk

au

iparam(4): nrwrk

Sparse Direct Solver Reference

auf

real*8

On entry, if RPARAM(9) =

Sparse Direct Solver Reference

nbx
integer*4

iparam(5): iounit
On entry, defines the I/O unit number for printing error messages and information from the routine DUSKYX. The I/O unit must be opened in the calling subprogram. If *iounit*

Description

The VEXP function computes the exponential of *n* elements of a vector as follows:

```
end
```

Example

```
integer nprocs,n
integer*8 hop
```

Example

Sort Reference

If **type**

Part 4—Appendices

This section contains appendices that provide supplemental information about

Compaq Tru64 UNIX Considerations

B

D

Bibliography

Bibliography

D.6 Iterative Solvers

DSSKYC, Reference–246