Chapter 5

Dense Matrix Factorisation Operations

The	following routines are described in the following pages:	
	Bunch-Kaufman-Parlett factor and solve	116
	Cholesky, LDL^T factor and solve	118
	Band LDL^T factor and solve	121
	LU factor (Gaussian elimination) and solve	122
	Band LU factor and solve	124
	QR factor and solve with/out column pivoting	126
	Extract matrices from compact form $(QR \text{ only})$	129
	Compute and apply Givens' rotations	130
	Householder transformations	133
	Solve for diagonal and triangular matrices	135
	Update routines for LDL^T and QR factorisations	137
	Eigenvalue routines	139
	Eigenvalue/vector extraction routines	142
	Singular value decomposition	143
	Matrix polynomials and exponentials	145
	Fast Fourier Transform	147

To use these routines use the include statement

#include "matrix2.h"

and for the complex routines

#include "zmatrix2.h"