NAG Library Chapter Contents

f01 – Matrix Operations, Including Inversion

f01 Chapter Introduction

Function Name	Mark of Introduction	Purpose
f01bnc	1	nag_complex_cholesky UU^H factorization of complex Hermitian positive definite matrix **Note**: this function is scheduled for withdrawal at Mark 25, see Advice on Replacement Calls for Withdrawn/Superseded Functions for further information.
f01ecc	9	nag_real_gen_matrix_exp Real matrix exponential
f01edc	9	nag_real_symm_matrix_exp Real symmetric matrix exponential
f01efc	23	nag_matop_real_symm_matrix_fun Function of a real symmetric matrix
f01ejc	23	nag_matop_real_gen_matrix_log Real matrix logarithm
f01ekc	23	nag_matop_real_gen_matrix_fun_std Exponential, sine, cosine, sinh or cosh of a real matrix (Schur–Parlett algorithm)
f01elc	24	nag_matop_real_gen_matrix_fun_num Function of a real matrix (using numerical differentiation)
f01emc	23	nag_matop_real_gen_matrix_fun_usd Function of a real matrix (using user-supplied derivatives)
f01enc	24	nag_matop_real_gen_matrix_sqrt Real matrix square root
f01epc	24	nag_matop_real_tri_matrix_sqrt Real upper quasi-triangular matrix square root
f01eqc	24	nag_matop_real_gen_matrix_pow General power of a real matrix
f01fcc	23	nag_matop_complex_gen_matrix_exp Complex matrix exponential
f01fdc	23	nag_matop_complex_herm_matrix_exp Complex Hermitian matrix exponential
f01ffc	23	nag_matop_complex_herm_matrix_fun Function of a complex Hermitian matrix
f01fjc	23	nag_matop_complex_gen_matrix_log Complex matrix logarithm
f01fkc	23	nag_matop_complex_gen_matrix_fun_std Exponential, sine, cosine, sinh or cosh of a complex matrix (Schur–Parlett algorithm)
f01flc	24	nag_matop_complex_gen_matrix_fun_num Function of a complex matrix (using numerical differentiation)
f01fmc	23	nag_matop_complex_gen_matrix_fun_usd Function of a complex matrix (using user-supplied derivatives)
f01fnc	24	nag_matop_complex_gen_matrix_sqrt Complex matrix square root
f01fpc	24	nag_matop_complex_tri_matrix_sqrt Complex upper triangular matrix square root
f01fqc	24	nag_matop_complex_gen_matrix_pow General power of a complex matrix
f01gac	24	nag_matop_real_gen_matrix_actexp Action of a real matrix exponential on a real matrix

f01gbc	24	nag_matop_real_gen_matrix_actexp_rcomm Action of a real matrix exponential on a real matrix (reverse communication)
f01hac	24	nag_matop_complex_gen_matrix_actexp Action of a complex matrix exponential on a complex matrix
f01hbc	24	nag_matop_complex_gen_matrix_actexp_rcomm Action of a complex matrix exponential on a complex matrix (reverse communication)
f01jac	24	nag_matop_real_gen_matrix_cond_std Condition number for the exponential, logarithm, sine, cosine, sinh or cosh of a real matrix
f01jbc	24	nag_matop_real_gen_matrix_cond_num Condition number for a function of a real matrix (using numerical differentiation)
f01jcc	24	nag_matop_real_gen_matrix_cond_usd Condition number for a function of a real matrix (using user-supplied derivatives)
f01jdc	24	nag_matop_real_gen_matrix_cond_sqrt Condition number for square root of real matrix
f01jec	24	nag_matop_real_gen_matrix_cond_pow Condition number for real matrix power
f01jfc	24	nag_matop_real_gen_matrix_frcht_pow Fréchet derivative of real matrix power
f01jgc	24	nag_matop_real_gen_matrix_cond_exp Condition number for real matrix exponential
f01jhc	24	nag_matop_real_gen_matrix_frcht_exp Fréchet derivative of real matrix exponential
f01jjc	24	nag_matop_real_gen_matrix_cond_log Condition number for real matrix logarithm
f01jkc	24	nag_matop_real_gen_matrix_frcht_log Fréchet derivative of real matrix logarithm
f01kac	24	nag_matop_complex_gen_matrix_cond_std Condition number for the exponential, logarithm, sine, cosine, sinh or cosh of a complex matrix
f01kbc	24	nag_matop_complex_gen_matrix_cond_num Condition number for a function of a complex matrix (using numerical differentiation)
f01kcc	24	nag_matop_complex_gen_matrix_cond_usd Condition number for a function of a complex matrix (using user-supplied derivatives)
f01kdc	24	nag_matop_complex_gen_matrix_cond_sqrt Condition number for square root of complex matrix
f01kec	24	nag_matop_complex_gen_matrix_cond_pow Condition number for complex matrix power
f01kfc	24	nag_matop_complex_gen_matrix_frcht_pow Fréchet derivative of complex matrix power
f01kgc	24	nag_matop_complex_gen_matrix_cond_exp Condition number for complex matrix exponential
f01khc	24	nag_matop_complex_gen_matrix_frcht_exp Fréchet derivative of complex matrix exponential
f01kjc	24	nag_matop_complex_gen_matrix_cond_log Condition number for complex matrix logarithm
f01kkc	24	nag_matop_complex_gen_matrix_frcht_log Fréchet derivative of complex matrix logarithm
f01mcc	1	nag_real_cholesky_skyline LDL^{T} factorization of real symmetric positive definite variable-bandwidth (skyline) matrix

f01qcc	1	nag_real_qr QR factorization of real m by n matrix $(m \geq n)$ **Note**: this function is scheduled for withdrawal at Mark 25, see Advice on Replacement Calls for Withdrawn/Superseded Functions for further information.
f01qdc	1	nag_real_apply_q Compute QB or $Q^{\mathrm{T}}B$ after factorization by nag_real_qr (f01qcc) **Note**: this function is scheduled for withdrawal at Mark 25, see Advice on Replacement Calls for Withdrawn/Superseded Functions for further information.
f01qec	1	nag_real_form_q Form columns of Q after factorization by nag_real_qr (f01qcc) **Note**: this function is scheduled for withdrawal at Mark 25, see Advice on Replacement Calls for Withdrawn/Superseded Functions for further information.
f01rcc	1	nag_complex_qr QR factorization of complex m by n matrix $(m \geq n)$ **Note**: this function is scheduled for withdrawal at Mark 25, see Advice on Replacement Calls for Withdrawn/Superseded Functions for further information.
f01rdc	1	nag_complex_apply_q Compute QB or $Q^{H}B$ after factorization by nag_complex_qr (f01rcc) **Note**: this function is scheduled for withdrawal at Mark 25, see Advice on Replacement Calls for Withdrawn/Superseded Functions for further information.
f01rec	1	nag_complex_form_q Form columns of Q after factorization by nag_complex_qr (f01rcc) **Note**: this function is scheduled for withdrawal at Mark 25, see Advice on Replacement Calls for Withdrawn/Superseded Functions for further information.