

NAG Library Chapter Contents

F04 – Simultaneous Linear Equations

F04 Chapter Introduction

Routine Name	Mark of Introduction	Purpose
F04ABF	2	nagf_linsys_real_posdef_solve_ref Solution of real symmetric positive definite simultaneous linear equations with multiple right-hand sides using iterative refinement (Black Box)
F04AEF	2	nagf_linsys_real_square_solve_ref Solution of real simultaneous linear equations with multiple right-hand sides using iterative refinement (Black Box)
F04AMF	2	nagf_linsys_real_gen_lsqsol Least squares solution of m real equations in n unknowns, $\text{rank} = n$, $m \geq n$ using iterative refinement (Black Box)
F04ASF	4	nagf_linsys_real_posdef_solve_1rhs Solution of real symmetric positive definite simultaneous linear equations, one right-hand side using iterative refinement (Black Box)
F04ATF	4	nagf_linsys_real_square_solve_1rhs Solution of real simultaneous linear equations, one right-hand side using iterative refinement (Black Box)
F04AXF	7	nagf_linsys_real_sparse_fac_solve Solution of real sparse simultaneous linear equations (coefficient matrix already factorized)
F04BAF	21	nagf_linsys_real_square_solve Computes the solution, estimated condition number and error-bound to a real system of linear equations
F04BBF	21	nagf_linsys_real_band_solve Computes the solution, estimated condition number and error-bound to a real banded system of linear equations
F04BCF	21	nagf_linsys_real_tridiag_solve Computes the solution, estimated condition number and error-bound to a real tridiagonal system of linear equations
F04BDF	21	nagf_linsys_real_posdef_solve Computes the solution, estimated condition number and error-bound to a real symmetric positive definite system of linear equations
F04BEF	21	nagf_linsys_real_posdef_packed_solve Computes the solution, estimated condition number and error-bound to a real symmetric positive definite system of linear equations, packed storage
F04BFF	21	nagf_linsys_real_posdef_band_solve Computes the solution, estimated condition number and error-bound to a real symmetric positive definite banded system of linear equations
F04BGF	21	nagf_linsys_real_posdef_tridiag_solve Computes the solution, estimated condition number and error-bound to a real symmetric positive definite tridiagonal system of linear equations
F04BHF	21	nagf_linsys_real_symm_solve Computes the solution, estimated condition number and error-bound to a real symmetric system of linear equations
F04BJF	21	nagf_linsys_real_symm_packed_solve Computes the solution, estimated condition number and error-bound to a real symmetric system of linear equations, packed storage
F04CAF	21	nagf_linsys_complex_square_solve Computes the solution, estimated condition number and error-bound to a complex system of linear equations

F04CBF	21	<code>nagf_linsys_complex_band_solve</code> Computes the solution, estimated condition number and error-bound to a complex banded system of linear equations
F04CCF	21	<code>nagf_linsys_complex_tridiag_solve</code> Computes the solution, estimated condition number and error-bound to a complex tridiagonal system of linear equations
F04CDF	21	<code>nagf_linsys_complex_posdef_solve</code> Computes the solution, estimated condition number and error-bound to a complex Hermitian positive definite system of linear equations
F04CEF	21	<code>nagf_linsys_complex_posdef_packed_solve</code> Computes the solution, estimated condition number and error-bound to a complex Hermitian positive definite system of linear equations, packed storage
F04CFF	21	<code>nagf_linsys_complex_posdef_band_solve</code> Computes the solution, estimated condition number and error-bound to a complex Hermitian positive definite banded system of linear equations
F04CGF	21	<code>nagf_linsys_complex_posdef_tridiag_solve</code> Computes the solution, estimated condition number and error-bound to a complex Hermitian positive definite tridiagonal system of linear equations
F04CHF	21	<code>nagf_linsys_complex_herm_solve</code> Computes the solution and error-bound to a complex Hermitian system of linear equations
F04CJF	21	<code>nagf_linsys_complex_herm_packed_solve</code> Computes the solution, estimated condition number and error-bound to a complex Hermitian system of linear equations, packed storage
F04DHF	21	<code>nagf_linsys_complex_symm_solve</code> Computes the solution, estimated condition number and error-bound to a complex symmetric system of linear equations
F04DJF	21	<code>nagf_linsys_complex_symm_packed_solve</code> Computes the solution, estimated condition number and error-bound to a complex symmetric system of linear equations, packed storage
F04FEF	15	<code>nagf_linsys_real_toeplitz_yule</code> Solution of the Yule–Walker equations for real symmetric positive definite Toeplitz matrix, one right-hand side
F04FFF	15	<code>nagf_linsys_real_toeplitz_solve</code> Solution of real symmetric positive definite Toeplitz system, one right-hand side
F04JGF	8	<code>nagf_linsys_real_gen_solve</code> Least squares (if $\text{rank} = n$) or minimal least squares (if $\text{rank} < n$) solution of m real equations in n unknowns, $m \geq n$
F04LEF	11	<code>nagf_linsys_real_tridiag_fac_solve</code> Solution of real tridiagonal simultaneous linear equations (coefficient matrix already factorized by F01LEF)
F04LHF	13	<code>nagf_linsys_real_blkdiag_fac_solve</code> Solution of real almost block diagonal simultaneous linear equations (coefficient matrix already factorized by F01LHF)
F04MCF	8	<code>nagf_linsys_real_posdef_vband_solve</code> Solution of real symmetric positive definite variable-bandwidth simultaneous linear equations (coefficient matrix already factorized by F01MCF)
F04MEF	15	<code>nagf_linsys_real_toeplitz_yule_update</code> Update solution of the Yule–Walker equations for real symmetric positive definite Toeplitz matrix
F04MFF	15	<code>nagf_linsys_real_toeplitz_update</code> Update solution of real symmetric positive definite Toeplitz system
F04QAF	11	<code>nagf_linsys_real_gen_sparse_lsqsol</code> Sparse linear least squares problem, m real equations in n unknowns
F04YAF	11	<code>nagf_linsys_real_gen_lsq_covmat</code> Covariance matrix for linear least squares problems, m real equations in n unknowns

F04YCF	13	nagf_linsys_withdraw_real_norm_rcomm Norm estimation (for use in condition estimation), real matrix Note: this routine is scheduled for withdrawal at Mark 26, see Advice on Replacement Calls for Withdrawn/Superseded Routines for further information.
F04YDF	24	nagf_linsys_real_gen_norm_rcomm Norm estimation (for use in condition estimation), real rectangular matrix
F04ZCF	13	nagf_linsys_withdraw_complex_norm_rcomm Norm estimation (for use in condition estimation), complex matrix Note: this routine is scheduled for withdrawal at Mark 26, see Advice on Replacement Calls for Withdrawn/Superseded Routines for further information.
F04ZDF	24	nagf_linsys_complex_gen_norm_rcomm Norm estimation (for use in condition estimation), complex rectangular matrix
