NAG Library Chapter Contents

d02 – Ordinary Differential Equations

d02 Chapter Introduction – a description of the Chapter and an overview of the algorithms available

Function Name	Mark of Introduction	Purpose
d02cjc	2	nag_ode_ivp_adams_gen Ordinary differential equation solver using a variable-order variable-step Adams' method (Black Box)
d02ejc	3	nag_ode_ivp_bdf_gen Ordinary differential equations solver, stiff, initial value problems using the Backward Differentiation Formulae
d02gac	3	nag_ode_bvp_fd_nonlin_fixedbc Ordinary differential equations solver, for simple nonlinear two-point boundary value problems, using a finite difference technique with deferred correction
d02gbc	3	nag_ode_bvp_fd_lin_gen Ordinary differential equations solver, for general linear two-point boundary value problems, using a finite difference technique with deferred correction
d02mcc	9	nag_dae_ivp_dassl_cont DASSL method continuation resetting function
d02mwc	9	nag_dae_ivp_dassl_setup Implicit ordinary differential equations/DAEs, initial value problem, setup for nag_dae_ivp_dassl_gen (d02nec)
d02nec	9	nag_dae_ivp_dassl_gen Implicit ordinary differential equations/DAEs, initial value problem, DASSL method integrator
d02npc	9	nag_dae_ivp_dassl_linalg Implicit ordinary differential equations/DAEs, initial value problem linear algebra setup function for nag_dae_ivp_dassl_gen (d02nec)
d02pec	24	nag_ode_ivp_rkts_range Ordinary differential equations, initial value problem, Runge–Kutta method, integration over range with output
d02pfc	24	nag_ode_ivp_rkts_onestep Ordinary differential equations, initial value problem, Runge–Kutta method, integration over one step
d02pgc	26	nag_ode_ivp_rk_step_revcomm Ordinary differential equations, initial value problem, Runge–Kutta method, integration by reverse communication
d02phc	26	nag_ode_ivp_rk_interp_setup Set up interpolant by reverse communication for solution and derivative evaluations at points within the range of the last integration step taken by nag_ode_ivp_rk_step_revcomm (d02pgc)
d02pjc	26	nag_ode_ivp_rk_interp_eval Evaluate interpolant, set up using nag_ode_ivp_rkts_setup (d02pqc), to approximate solution and/or solution derivatives at a point within the range of the last integration step taken by nag_ode_ivp_rk_step_revcomm (d02pgc)
d02pqc	24	nag_ode_ivp_rkts_setup Ordinary differential equations, initial value problem, setup for nag_ode_ivp_rkts_range (d02pec) and nag_ode_ivp_rkts_onestep (d02pfc)

d02prc	24	nag_ode_ivp_rkts_reset_tend Ordinary differential equations, initial value problem, resets end of range for nag_ode_ivp_rkts_onestep (d02pfc)
d02psc	24	nag_ode_ivp_rkts_interp Ordinary differential equations, initial value problem, interpolation for nag_ode_ivp_rkts_onestep (d02pfc)
d02ptc	24	nag_ode_ivp_rkts_diag Ordinary differential equations, initial value problem, integration diagnostics for nag_ode_ivp_rkts_range (d02pec) and nag_ode_ivp_rkts_onestep (d02pfc)
d02puc	24	nag_ode_ivp_rkts_errass Ordinary differential equations, initial value problem, error assessment diagnostics for nag_ode_ivp_rkts_range (d02pec) and nag_ode_ivp_rkts_onestep (d02pfc)
d02qfc	2	nag_ode_ivp_adams_roots Ordinary differential equation solver using Adams' method (sophisticated use)
d02qwc	2	nag_ode_ivp_adams_setup Setup function for nag_ode_ivp_adams_roots (d02qfc)
d02qyc	2	nag_ode_ivp_adams_free Freeing function for use with nag_ode_ivp_adams_roots (d02qfc)
d02qzc	2	nag_ode_ivp_adams_interp Interpolation function for use with nag_ode_ivp_adams_roots (d02qfc)
d02rac	3	nag_ode_bvp_fd_nonlin_gen Ordinary differential equations solver, for general nonlinear two-point boundary value problems, using a finite difference technique with deferred correction
d02tlc	24	nag_ode_bvp_coll_nlin_solve Ordinary differential equations, general nonlinear boundary value problem, collocation technique
d02tvc	24	nag_ode_bvp_coll_nlin_setup Ordinary differential equations, general nonlinear boundary value problem, setup for nag_ode_bvp_coll_nlin_solve (d02tlc)
d02txc	24	nag_ode_bvp_coll_nlin_contin Ordinary differential equations, general nonlinear boundary value problem, continuation facility for nag_ode_bvp_coll_nlin_solve (d02tlc)
d02tyc	24	nag_ode_bvp_coll_nlin_interp Ordinary differential equations, general nonlinear boundary value problem, interpolation for nag_ode_bvp_coll_nlin_solve (d02tlc)
d02tzc	24	nag_ode_bvp_coll_nlin_diag Ordinary differential equations, general nonlinear boundary value problem, diagnostics for nag_ode_bvp_coll_nlin_solve (d02tlc)
d02uac	23	nag_ode_bvp_ps_lin_coeffs Coefficients of Chebyshev interpolating polynomial from function values on Chebyshev grid
d02ubc	23	nag_ode_bvp_ps_lin_cgl_vals Function or low-order-derivative values on Chebyshev grid from coefficients of Chebyshev interpolating polynomial
d02ucc	23	nag_ode_bvp_ps_lin_cgl_grid Chebyshev Gauss–Lobatto grid generation
d02udc	23	nag_ode_bvp_ps_lin_cgl_deriv Differentiate a function by the FFT using function values on Chebyshev grid
d02uec	23	nag_ode_bvp_ps_lin_solve Solve linear constant coefficient boundary value problem on Chebyshev grid, Integral formulation
d02uwc	23	nag_ode_bvp_ps_lin_grid_vals Interpolate a function from Chebyshev grid to uniform grid using barycentric Lagrange interpolation

d02uyc	23	nag_ode_bvp_ps_lin_quad_weights Clenshaw–Curtis quadrature weights for integration using computed Chebyshev coefficients
d02uzc	23	nag_ode_bvp_ps_lin_cheb_eval Chebyshev polynomial evaluation, $T_k(x)$