


Edit <> Code

 Merged sfiligoi merged 3 commits into `gafusion:master` from `sfiligoi:wavenumber_230228`  on Mar 1

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<pre> 1 ----- 2 cgyro_advect_wavenumber.f90 3 4 ! 5 ! PURPOSE: 6 ! Manage shearing by wavenumber advection. 7 !----- 8 9 subroutine cgyro_advect_wavenumber(ij) 10 11 use cgyro_globals 12 use timer_lib 13 14 implicit none 15 16 integer, intent(in) :: ij 17 integer :: ir, l, ll, j, icc, in, itor 18 complex, dimension(:, :), allocatable :: he 19 20 if (nonlinear_flag == 0) return 21 22 if (source_flag == 1) then 23 call timer_lib_in('shear') 24 25 allocate(he(n_theta, 1-2*n_wave:n_radial+2*n_wave)) 26 27 #ifdef _OPENACC 28 !\$acc parallel loop collapse(2) gang private(in, ir, l, icc, ll, he) & 29 !\$acc& present(rhs(:, :, :, ij), omega_ss, field, h_x, c_wave) & 30 !\$acc& vector_length(n_theta) 31 #else 32 !\$omp parallel do collapse(2) private(in, ir, j, icc, l, ll, he) 33 #endif 34 do itor=nt1, nt2 35 do in=1, nv_loc 36 he(:, 1-2*n_wave:0) = 0.0 37 he(:, n_radial+1:n_radial+2*n_wave) = 0.0 38 39 ! Wavenumber advection ExB shear 40 if (shear_method == 2) then 41 42 !\$acc loop seq 43 do ir=1, n_radial 44 icc = (ir-1)*n_theta 45 !\$acc loop vector private(j) 46 do j=1, n_theta 47 he(j, ir) = omega_eb_base*itor+h_x(icc+j, in, itor) 48 enddo 49 enddo 50 51 !\$acc loop seq 52 do ir=1, n_radial 53 icc = (ir-1)*n_theta 54 55 !\$acc loop seq 56 do l=1, n_wave 57 ll = 2*l-1 58 !\$acc loop vector private(j) 59 do j=1, n_theta 60 61 ! Sign throughout paper is incorrect (or gamma -> - gamma) 62 ! Thus sign below has been checked and is correct 63 rhs(icc+j, in, itor, ij) = rhs(icc+j, in, itor, ij)+c_wave(l)*(he(j, ir+ll)-he(j, ir-ll)) 64 enddo 65 66 enddo 67 enddo 68 69 endif 70 71 ! Wavenumber advection profile shear 72 if (profile_shear_flag == 1) then 73 74 !\$acc loop seq 75 do ir=1, n_radial 76 icc = (ir-1)*n_theta 77 !\$acc loop vector private(j) 78 do j=1, n_theta 79 he(j, ir) = sum(omega_ss(:, icc+j, in, itor)*field(:, icc+j, itor)) 80 enddo 81 enddo 82 83 !\$acc loop seq 84 do ir=1, n_radial 85 icc = (ir-1)*n_theta 86 87 !\$acc loop seq 88 do l=1, n_wave 89 ll = 2*l-1 90 !\$acc loop vector private(j) 91 do j=1, n_theta 92 93 ! Note opposite sign to ExB shear 94 rhs(icc+j, in, itor, ij) = rhs(icc+j, in, itor, ij)-c_wave(l)*(he(j, ir+ll)-he(j, ir-ll)) 95 enddo 96 97 enddo 98 99 enddo 100 endif 101 102 deallocate(he) 103 call timer_lib_out('shear') 104 105 endif 106 107 end subroutine cgyro_advect_wavenumber </pre>	<pre> 1 ----- 2 cgyro_advect_wavenumber.f90 3 4 ! 5 ! PURPOSE: 6 ! Manage shearing by wavenumber advection. 7 !----- 8 9 subroutine cgyro_advect_wavenumber(ij) 10 11 use cgyro_globals 12 use timer_lib 13 14 implicit none 15 16 integer, intent(in) :: ij 17 integer :: ir, l, ll, j, icc, ivc, itor, llnt 18 complex :: r1, he1, he2 19 20 if (nonlinear_flag == 0) return 21 22 if (source_flag == 1) then 23 call timer_lib_in('shear') 24 25 !\$def _OPENACC 26 !\$acc parallel loop collapse(2) gang private(icc, ir, l, icc) & 27 !\$acc& present(rhs(:, :, :, ij), omega_ss, field, h_x, c_wave) 28 #else 29 !\$omp parallel do collapse(2) private(icc, ir, j, icc, l, ll, llnt, he1, he2) 30 #endif 31 do itor=nt1, nt2 32 do ivc=1, nv_loc 33 34 ! Wavenumber advection ExB shear 35 if (shear_method == 2) then 36 37 !\$acc loop collapse(2) vector private(ir, j, l, icc, ll, r1, llnt, he1, he2) 38 39 do ir=1, n_radial 40 41 do j=1, n_theta 42 icc = (ir-1)*n_theta+j 43 r1 = 0.0 44 45 !\$acc loop seq 46 do l=1, n_wave 47 ll = (2*l-1) 48 llnt = ll*n_theta 49 ! was he(j, ir+ll) 50 if ((ir-ll) <= n_radial) then 51 he1 = h_x(icc+j+llnt, ivc, itor) 52 else 53 he1 = 0.0 54 endif 55 ! was he(j, ir-ll) 56 if ((ir-ll) >= 1) then 57 he2 = h_x(icc-j-llnt, ivc, itor) 58 else 59 he2 = 0.0 60 endif 61 ! Sign throughout paper is incorrect (or gamma -> - gamma) 62 ! Thus sign below has been checked and is correct 63 r1 = r1+c_wave(l)*(he1-he2) 64 enddo 65 66 rhs(icc, ivc, itor, ij) = rhs(icc, ivc, itor, ij) + omega_eb_base*itor*r1 67 enddo 68 enddo 69 70 endif 71 72 ! Wavenumber advection profile shear 73 if (profile_shear_flag == 1) then 74 75 !\$acc loop collapse(2) vector private(ir, j, l, icc, ll, r1, llnt, he1, he2) 76 do ir=1, n_radial 77 78 do j=1, n_theta 79 icc = (ir-1)*n_theta+j 80 r1 = rhs(icc, ivc, itor, ij) 81 82 !\$acc loop seq 83 do l=1, n_wave 84 ll = 2*l-1 85 llnt = ll*n_theta 86 ! was he(j, ir+ll) 87 if ((ir-ll) <= n_radial) then 88 he1 = sum(omega_ss(:, icc+j+llnt, ivc, itor)*field(:, icc+j+llnt, itor)) 89 else 90 he1 = 0.0 91 endif 92 ! was he(j, ir-ll) 93 if ((ir-ll) >= 1) then 94 he2 = sum(omega_ss(:, icc-j-llnt, ivc, itor)*field(:, icc-j-llnt, itor)) 95 else 96 he2 = 0.0 97 endif 98 ! Note opposite sign to ExB shear 99 r1 = r1-c_wave(l)*(he1-he2) 100 enddo 101 102 rhs(icc, ivc, itor, ij) = r1 103 enddo 104 105 endif 106 107 call timer_lib_out('shear') 108 109 endif 110 111 end subroutine cgyro_advect_wavenumber </pre>
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