List of changes to FAR3d distribution

January 25, 2021: New version with following modifications made by Luis Garcia and others to correct errors in how the ion/electron damping and thermal ion FLR terms were introduced in FAR3d. These errors in the earlier code led not only to incorrect damping rates, but also in some cases resulted in SegFaults. The following is a summary of the changes that were made:
- The Landau ion/electron damping terms were modified to correct errors in the earlier version
- This involved adding two new subroutines: blockjl and b2lxl
- Corrections were made in the thermal ion FLR terms, specifically in calls to dlsq_r and related subroutines
- To calculate dlsq_r and the corresponding blocks, two equilibrium matrices: lplr_r and lplt_r were introduced
- The code has been further simplified by removing some redundant equilibrium matrices
- Note that the Trapped_on and vtheq terms are not included
- Also, the inputlist_namelist.f90 file was modified to be consistent with the new version
- The file inputlist_mod.f90 was removed since it is no longer needed as a separate file

July 6,2020: New version with following modifications + changes from Jacobo that correct ion FLR terms was put into this directory

linstart.f90, lincheck.f90:

corrected spelling error in comment statement: “Sharing” should be “Shearing”

linstart.f90:

changed “write(*,” “write(0,” so these screen writes work on all platforms

vmec.f90:

added xkprl = real(n,kind=IDP) - real(m,kind=IDP)*qqinv(j) so that Landau damping works properly

added kind=IDP specifier to complx statements so precision doesn’t revert to lower *4

level cmplx1 = cmplx(0._IDP,1._IDP,kind=IDP)

replaced “1/r” in several places with “rinv” so there is no possibility of division by zero

inputlist.f90:

increased format of eq_name from a20 to a40 so longer names can be used

inputlist_mod.f90:

increased format of eq_name from a20 to a40 so longer names can be used

ae_profiles.f90:

set pol_rot_vel_e = 0 since it is not included in taefl.dat file and should not be used
added _IDP specifier to constant numbers so precision is not lost
corrected vzt_eqp and vth_eqp - should be scaled by 1.e+3 instead of 1.e+5

eigensolver_tools.f90:

lln(i) and signl(i) to the jdqz.dat output file since these are needed by xEigen and for the post-processing
done to make 2D eigenfunction plots
changed “write(*,” “write(0,” so these screen writes work on all platforms

main_jdqz_TAEFL_cmplx.f90:

added lln(i) and signl(i) to jdqz.dat reads and egn_mode_ascii.dat writes - this information is required for
post-processing done to make 2D visualizations of mode structures

Eigensolver.sh:

The compile script was changed so that all codes are compiled together as a single binary, instead of the old way where the LIB_JDQZ files were compiled as as a separate library. There was no need to use the library approach and it tends to lead to errors on some computing platforms.