

Abstract Submitted
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An Efficient Method for Verifying Gyrokinetic Microstability Codes¹

R. BRAVENEC, Fourth State Research, J. CANDY, General Atomics, W. DORLAND, U. Maryland, C. HOLLAND, UCSD — Benchmarks for gyrokinetic microstability codes can be developed through successful “apples-to-apples” comparisons among them. Unlike previous efforts, we perform the comparisons for actual discharges, rendering the verification efforts relevant to existing experiments and future devices (ITER). The process requires i) assembling the experimental analyses at multiple times, radii, discharges, and devices, ii) creating the input files ensuring that the input parameters are faithfully translated code-to-code, iii) running the codes, and iv) comparing the results, all in an organized fashion. The purpose of this work is to automate this process as much as possible: At present, a python routine is used to generate and organize GYRO input files from TRANSP or ONETWO analyses. Another routine translates the GYRO input files into GS2 input files. (Translation software for other codes has not yet been written.) Other python codes submit the multiple GYRO and GS2 jobs, organize the results, and collect them into a table suitable for plotting. (These separate python routines could easily be consolidated.) An example of the process – a linear comparison between GYRO and GS2 for a DIII-D discharge at multiple radii – will be presented.

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