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Benchmark of MEGA Code on Fast Ion Pressure Profile in the Large Helical Device RYOSUKE SEKI, YASUSHI TODO, YASUHIRO SUZUKI, MASAKI OSAKABE, National Institute for Fusion Science — As the first step for the analyses of energetic particle driven instabilities in the Large Helical Device (LHD) including the collisions of fast ions and the neutral beam injection, MEGA code is benchmarked on the classical fast ion pressure profile using the temperature and density profiles measured in the LHD experiments. In this benchmark, the MHD equilibrium is calculated with HINT code, and the beam deposition profile is calculated with HFREYA code. Since the equilibrium is not axisymmetric in LHD, the accuracy of orbit tracing is important for fast ion analyses. In the slowing down process of the MEGA code, the guiding center equation is numerically solved using the 4th order Runge-Kutta method and the linear interpolation. MEGA code is benchmarked against the results of MORH code, in which the 6th order Runge-Kutta and the 4th order spline interpolation are used. In LHD, the position of the loss boundary of fast ion is important because there are many re-entering fast ions which re-enter in plasma after they have once passed out of plasma. The effects of the position of the loss boundary on the fast ion pressure profile will be discussed, and a preliminary result of Alfvén eigenmodes will be presented.

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