A benchmark between HYMAGYC, MEGA and ORB5 codes using the NLED-AUG test case to study Alfvénic modes driven by energetic particles

G. Vlad[1] (gregorio.vlad@enea.it), X. Wang[3], F. Vannini[2], S. Briguglio[1], N. Carlevaro[1], M. Falessi[1], G. Fogaccia[1], V. Fusco[1], F. Zonca[1,3], A. Biancalani[2], A. Bottino[2], T. Hayward-Schneider[2], P. Lauber[2]

[1]ENEA, Fusion and Nuclear Safety Department, C. R. Frascati, Via E. Fermi 45, 00044 Frascati (Roma), Italy
[2]Max-Planck-Institut für Plasmaphysik, Boltzmannstr. 2, 85748 Garching, Germany
[3]IFTS and Department of Physics, Zhejiang University, Hangzhou 310027, People's Republic of China

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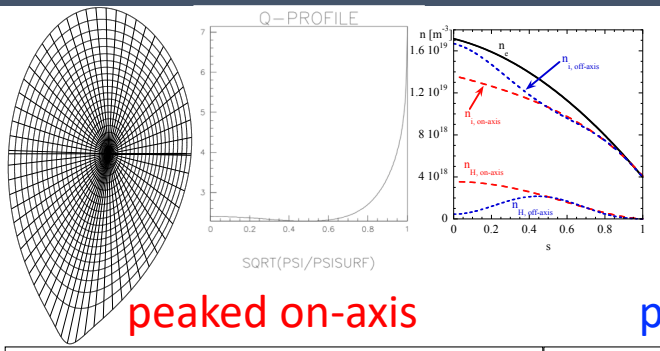
- Benchmark activity carried out within the ENR project MET (2019-2020) between the two hybrid MHD-GK codes HYMAGYC and MEGA, and the full GK code ORB5, for *n*=1 linear stability of energetic particle (EP) driven Alfvénic modes.
- Two cases considered for EP density profiles n_H:
  - peaked on-axis, and
  - peaked off-axis.
- Scans w.r.t. EP density n_H and temperature T_H.
- At nominal values:
  - for peaked on-axis case good agreement between HYMAGYC and MEGA (same RSAE), whereas ORB5 observes a TAE; for higher n_H and/or T_H good agreement among the three codes is recovered
  - excellent agreement among all codes for peaked off-axis case (same TAE, ω, some differences on γ → some differences on damping)



NLED-AUG equilibrium, n_H peaked on/off axis, isotropic Maxwellian EP, T_H=93keV

peaked on-axis

peaked off-axis