TOFU'S BENCHMARKING

AWP18-EEG-CEA-MENDOZA

LAURA S. MENDOZA AND DIDIER VEZINET

1. Starting Point

ToFu's versioning is set automatically with each `git` tag. We will set as a reference point the version number `1.3.22-6-g45cb446`, which also corresponds to the `git` tag.

1.1. **Set of tests.** In order to have an extensive benchmarking, we need to set a series of tests configurations that will encompass the maximum scenarios, as well as allow us to test the speed-up of simple yet essential methods. Let us first define the different geometries:

- Tests with only a vessel:
  - Config A1:
    - WEST – V1 (realistic) : 63 points
  - Config A2:
    - TER – Test (artificial) : 551 points
  - Config A3:
    - WESTSep – Test (artificial, inspired by the separatrix of an experimental shock of WEST) : 1001 points

- Tests with a vessel and structural elements:
  - Config B1: 'min' (only axisymmetric structures)
    - Ves: WEST V0
    - Struct:
      - Baffle : Baffle-V0
      - Upper divertor : UpDiv-V1
      - Lower divertor : LowDiv-V1
  - Config B2: 'light' (same as B1 + some toroidal structures)
    - Ves: WEST V0
    - Struct:
      - Baffle: Baffle-V1
      - Upper divertor: UpDiv-V2
      - Lower divertor: LowDiv-V2
      - Inner Bumpers: InnerBumpers-V1
      - Outer Bumper: OuterBumper-V1
      - IC antennas: IC1-V1 + IC2-V1 + IC3-V1

- Config B3: 'full'
  - Ves: WEST-V0
  - Struct:
    - Baffle: Baffle-V2
    - Upper divertor: UpDiv-V3
    - Lower divertor: LowDiv-V3
    - Inner Bumpers: InnerBumpers-V3
    - Outer Bumper: OuterBumper-V3
    - IC antennas: IC1-V1 + IC2-V1 + IC3-V1
    - LH antennas : LH-V1, LH2-V1
    - Ripple : Ripple-V1
    - VDE : VDE-V0

We will also vary the number of lines sights $N_i = 10^i$ with $i = 0, \cdots, 6$