Divertor detachment stability and dynamics

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5th July 2016

Abstract

Do I need an abstract? Well, if I do then it will go here, spread over both columns.

1 Introduction

2 Background

Brief overview of the importance of detachment for ITER and future tokamaks. - Current material limit - Divertor geometries (conventional, super-X, snowflake) -

3 Experimental Design

SOL1D was installed on the remote server and some test simulations run to achieve a basic understanding of the set-up and outputs. The first aim was to ascertain an acceptable grid resolution to use, as a compromise is required concerning accuracy of results and time taken to run a simulation. SOL1D performs 1-dimensional simulations and the y-axis was chosen as the simulation axis.

Following SOL1D simulations, 2D simulations followed, with the initial goal being to compare results to the 1D case.

4 Results and Analysis

After a number of time-steps of SOL1D simulation it will usually settle down and get close to a steady-state solution. This can be seen in figure 1 - the variable's, $n_{e\ upstream}$, oscillations are damped to a very small amplitude as the simulation progresses and it approaches steady-state.

See figure 2 for a nice graph.

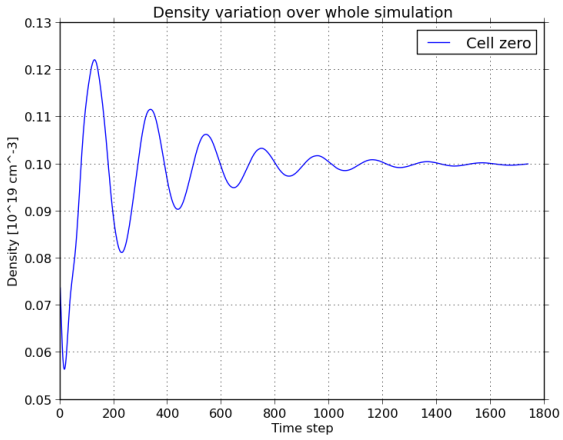

Figure 1: The variation of $n_{e\ upstream}$with simulation time step. **should maybe put the oscillations from other resolutions on the same figure to make it more interesting?**

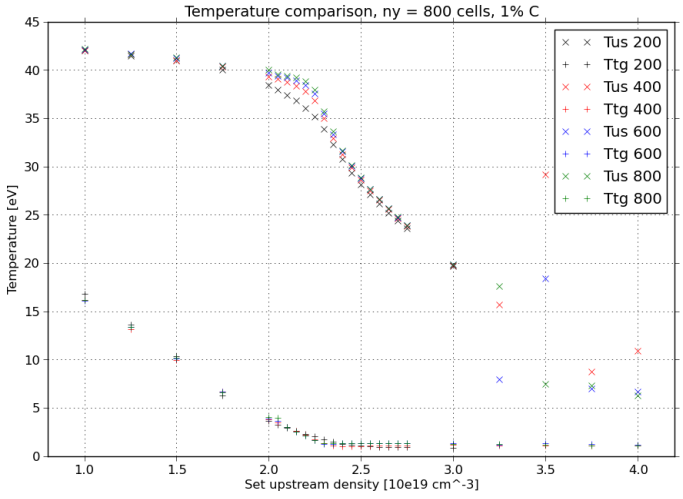

Figure 2: Comparison of $T_{upstream}$ and T_{target} at varying set $n_{e\ upstream}$ for different y-axis resolutions in SOL1D

5 Conclusion

References

[1] Ben Dudson et al. ().