Chapter 4 TRANSPORT PHYSICS AND INTEGRATED MODELLING OF PLASMA SCENARIOS

C.Angioni, P. Mantica, I. Casiraghi, N.Bonanomi

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DTT Consortium (DTT S.C.a r.l. Via E. Fermi 45 I-00044 Frascati (Roma) Italy)















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Rationale of Chapter 4



- Reviews the characteristics of the DTT device from the standpoint of confinement and transport studies
- Discusses DTT experimental possibilities in terms of engineering parameters and of the expected physical plasma parameters, underlying its unprecedented features in addressing core-edge- exhaust integration challenges
- Identifies main T&C aspects which make DTT different from present devices and a new and essential step towards ITER operation and the definition of a DEMO reactor
- Defines the main missions of DTT for confinement and transport studies and describes possible experiments in this topical area
- Experiments are organized in 4 groups and are also outlined in order of time depending on the maximum achievable heating power, magnetic field and current of the different DTT operational phases
- Shows plasma profiles from theory-based transport modelling predictions as examples of reference conditions that can be obtained in DTT experiments

Questions



- So far limited description of isotope experiments and main ions at the start of operation (H, He ?), or directly D ?
- Connections with other chapters still limited, in particular with Chapter 6 (Heating, Current Drive and Fuelling) and Chapter 7 (Fast Particle Physics)
- Role (and size) of sawteeth mentioned ... connection with Chapter 5 (MHD) ?
- Part of the predicted profiles refer to previous plasma configuration, not the new one upshifted. They can still be used as such, mentioning this aspect (current version), but updated profiles could be included as soon as these become available
- Still missing are two final sections: description of essential diagnostics for transport studies and short description of modelling tools (Appendix in the chapter ?).