EFDA
EUROPEAN FUSION DEVELOPMENT AGREEMENT
Task Force
INTEGRATED TOKAMAK MODELLING

Remote meeting, 29 September 2010

INTEGRATED SCENARIO MODELLING,
Introduction meeting 29 september

Presented by X LITAUDON & I VOITSEKOVITCH

TF Leader : P. Strand,
Deputies: R. Coelho, L-G. Eriksson, G. Falchetto

EFDA CSU Contact Person: D. Kalupin

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Agenda

➢ **Introduction**

➢ **Status of the ISM publication on edge modelling (density evolution) + discussion on the integrated edge modelling 2010 ISM tasks S. Wiesen (30')**

➢ **Progress of Hybrid modelling for JET and extrapolation to D-T J. Garcia (30')**

Review of the tasks within ISM projects

> ## Project-1 : Validation of the ITM tools (ETS)

> ## Project-2 : Interpretative & predictive integrated scenario modelling on existing devices
>> – **Focus on JET & ASDEX-U hybrid discharges (with & without Ip overshoot)**

> ## Project-3 : Predictive scenario modelling for ITER, JT-60SA, DEMO ...
>> – **Focus on ITER hybrid**
>> – **Repeat previous runs with new ECRH configuration**
>> – **Simulation of heat transport & particle (density peaking)**

Project-1 : Validation of the ITM tools (ETS) [1/1]

Ref.	Task name	Start date	Involved physicist	Status/comments
ISM-P1-2010-1	Verification of ETS tool on JET ohmic pulse	March 2010	D. Kalupin, X. Litaudon, J. Ferreira, D. Coster, I. Voitsekhovitch	Denis Kalupin reports on 17/09/2010
ISM-P1-2010-2	Verification of temperature and density transport solvers in ETS	Sept 2010	J. Ferreira, D. Kalupin, D. Coster, G. Pereverzev, I. Voitsekhovitch	No benchmarking requests for the moment, but may be expected closer to ETS Code camp in December.
ISM-P1-2010-3	Verification of impurity solver in ETS	Sept 2010	P. Belo, I. Ivanova-Stanik, D. Kalupin, I. Voitsekhovitch	Task agreed with Paula. Par is contacted concerning discussion with FR about Paula's assignement to this task.
ISM-P1-2010-4	Verification of equilibrium solver and PFDE in ETS	Sept 2010	D. Kalupin, F. Koechl, G. Pereverzev, D. Coster, I. Voitsekhovitch	Discussion within ETS team. Consideration of more advanced equilibrium solver (SPIDER?).
	ITER Machine description	Sept 2010		R. Coehlo in charge of the task not an ISM task

Project-2 : Interpretative & predictive integrated scenario modelling on existing devices [1/3]

Ref.	Task name	Start date	Involved physicist	Status/comments/actions
ISM-P2-2010-00	Modelling of current ramp-up in JET, Asdex, Tore Supra	2008	F. Imbeaux, D. Hogeweij, F. Koechl, J. Hobirk	Revised 16/09/2010-sent to co-authors for comments 1. Prad profiles for ASDEX-U AUG22110 are required 2. TS40676 (ECCD)- repeat modeling with reprocess ECRH power 3. JET pulses repeat with Prad measurement profiles
ISM-P2-2010-1	JET DT extrapolation of the hybrid regime	August 2010	G. Sips, C. Challis, F. Imbeaux, G. Giruzzi, J. Garcia , I. Voitsekovitch, J. Henkins, TRANSP modelling, F. Kochl (Jetto), L. Garzotti	Revised 16/09/2010- sent to co-authors for comments Presentation ISM meeting 29/Sept
ISM-P2-2010-2	Modelling of plasma rotation in Hybrid Scenario			Not started - low priority
ISM-P2-2010-3	Current ramp up JET discharges with li control.			Not started- low priority
ISM-P2-2010-4	Modelling of DIII-D current ramp up discharges (ITPA database)		I Voitsekhovitch, J. Hobirk, F. Imbeaux, D. Hogeweij, V. Parail, T Casper, D. Mikkelsen (T&C ITPA), G.L. Jackson, J.M. Park (DIII-D)	Not yet started

ISM, remote meeting, 29 September 2010, X. Litaudon 5

Project-2 : Interpretative & predictive integrated scenario modelling on existing devices [2/3]

Ref.	Task name	Start	Involved physicist	Status/comments/actions
ISM-P2-2010-05	Current ramp-up in JET Hybrid Scenario: modelling and optimisation.		E. Joffrin, J. Garcia, D. Hogeweij, F. Koechl ,	EJ proposes the following Pulses: 76858, 77933, 77922, 77914. J. Citrin modelling of 79626/79630 (with/without overshoot low delta
ISM-P2-2010-06	Modelling of JET current ramp down experiments – optimisation of flux consumption and li			Not started- low priority
ISM-P2-2010-07	Current profile diffusion in JET hybrid scenario		E. Joffrin, J. Garcia, D. Hogeweij, F. Koechl	Same pulses as ISM-merge with P2-2010-05 to be carried out when ISM-P2-2010-05 is finished
ISM-P2-2010-8	ASDEX interpretative hybrid modelling	Sept 2010	J. Hobirk, P. Belo, J. Citrin, J. Garcia, F. Koechl, J. Lonnroth, M. Schneider, I. Voitsekhovitch	Revised 17/09/2010- sent to co-authors for comments 1) AUG data in a format of ASTRA ufiles to be provided to I. Voitsekhovitch for the preparation of input PPFs for CRONOS and JETTO. 2. AUG NBI geometry to be provided for implementation to CRONOS and JETTO.

ISM, remote meeting, 29 September 2010, X. Litaudon 6

3

Project-2 : Interpretative & predictive integrated scenario modelling on existing devices [3/3]

EFDA Task Force
EUROPEAN FUSION DEVELOPMENT AGREEMENT
INTEGRATED TOKAMAK MODELLING

Ref.	Task name	Start	Involved physicist	Status/comments/actions
ISM-P2-2010-9	Predictive JET /JT-60U modelling of the identity experiments	Sept 2010	V. Parail, T. Tala Y. Sakamoto, P.C. de Vries, A. Salmi	Revised 17/09/2010, start during the ISM meeting Lisbon
ISM-P2-2010-10	Impurity of JET hybrid			

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7

Project-3 : Predictive scenario modelling for ITER (JT-60SA, DEMO)

EFDA Task Force
EUROPEAN FUSION DEVELOPMENT AGREEMENT
INTEGRATED TOKAMAK MODELLING

Ref.	Task name	Start date	Involved physicist	Status/comments
ISM-P3-2010-01	Migration of 2009 ISM ITER modelling to ITM-TF Gateway	Sept 2010	I. Voitsekhovitch (for technical work), all ISM members to suggest the runs, ITM expert to help with ITM conversion tools	ITER runs have been selected + TS, JET and AUG pulse list . Task complete – information sent to P. Strand on 17/09/2010
ISM-P3-2010-02	Modelling of deep pellet fuelling in ITER hybrid regime	Sept 2010	B. Pegourie, L. Garzotti,…	
ISM-P3-2010-03	Modelling of the current ramp-up to 15MA baseline scenario	2008	F. Imbeaux, D. Hogeweij, F. Koechl, J. Hobirk, T. Casper	Revised 16/09/2010 and sent to involved physics 1) define the current ramp-up parameters
ISM-P3-2010-04	ITER Hybrid 0-D modelling with HELIOS			XL check with JJ
ISM-P3-2010-05	ITER Hybrid 0-D modelling with METIS			XL check with JFA
ISM-P3-2010-06	Hybrid scenario with revised ITER ECRH antenna configuration		J. Garcia, M. Schneider, J. Citrin, F. Koechl, G. Giruzzi, G. Sips, T. Casper, E. Joffrin, J. Hobirk , I Voitsekovitch	Revised 16/09/2010 sent to involved physics Waiting for ITER-IO input
ISM-P3-2010-07	Hybrid scenario with revised ITER ECRH antenna and density modelling		J. Garcia, M. Schneider, J. Citrin, F. Koechl, G. Giruzzi, G. Sips, T. Casper, E. Joffrin , J. Hobirk, I Voitsekovitch	Revised 16/09/2010 sent to involved physics Waiting for ITER-IO input

ISM, remote meeting, 29 September 2010, X. Litaudon

8

4

Remote meeting

Regular remote meeting on Wednesday morning 10h30-12h00 CET (09h30-11h00 GMT) :

- Wed 29/09 10h30-12h00 CET
- Wed 13/10 10h30-12h00 CET
  - cancelled due to IAEA conf.
- **Wed 27/10 10h30-12h00 CET**
  - **Report from ITPA , IAEA**
  - **ITER Hybrid scenario, Ip ramp-up T Casper**
- Wed 10/11 10h30-12h00 CET : Delay to Wed 17/11 to avoid overlap with JET planning meeting
  - DIII-D ITPA modelling I. Voitsekovitch (tbc)
  - Status of the ISM publication on edge modelling S. Wiesen (tbc)
- Wed 24/11 10h30-12h00 CET
  - Preparation of working session
- Wed 08/12 10h30-12h00 CET

ISM Working session

- **ISM working session date and place to be confirmed but**
  - **the best compromise 29 nov- 03 Dec.**
  - **At Culham (or cadarache ?)**
- **to be confirmed by e-mail to ISM diffusion list**

- **ETS Code camp, tentatively scheduled for 6-17 December 2010 in Innsbruck**