

ADAS Meeting
October 2007



EFDA

EUROPEAN FUSION DEVELOPMENT AGREEMENT

Task Force
INTEGRATED TOKAMAK MODELLING

Some thoughts on the requirements of the
EFDA Task Force on Integrated Tokamak Modelling
for
Atomic, Molecular, Surface and Nuclear Physics Data

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Data needs

- The ITM has identified the need for
 - Atomic physics data
 - Rate coefficients (mainly for the fluid codes) for ionization, recombination, charge exchange, electron cooling ...
 - Cross sections (mainly for the kinetic codes)
 - Ionization, recombination, charge exchange, electron cooling ...
 - NBI
 - Individual line radiation (diagnostics)
 - Bundled charge states included
 - Molecular data
 - H_2 , D_2 , T_2 , HD, HT, DT
 - $C_w H_x D_y T_z$
 - ...
 - Surface data
 - Sputtering/Reflection coefficients
 - Including mixed materials
 - Chemical sputtering
 - Including mixed materials
 - Nuclear physics
 - Fusion cross-sections
 - Cross-sections for diagnostics

Constraints

- Amongst the identified constraints
 - Consistency
 - consistent use of data across the ITM
 - consistent set of data
 - Would need to be able to repeat a code analysis that was done years before
 - Version control
 - Centralized storage of data in a database?
 - Probably would need to share the data with the ITER partners
 - Any "special" IPR protection need to be identified at an early stage

Call for “Group of Experts”

- In the next “Call for Participation” in the ITM
 - The “Heads of Research Units” will be asked to identify experts in the fields of
 - Atomic physics
 - Molecular physics
 - Surface physics
 - Nuclear physics
- These people will be asked to identify solutions for the A/M/S/N data of the ITM-TF

Scope of ITM AMSN Group

- The ITM AMSN group would likely be formulated with a suggested scope to
 - Identify and report on detailed ITM needs for AMSN data (collaborative work with IMP's)
 - Propose a strategy for implementing an ITM (software) capacity for AMSN data (collaborative work with ISIP?)
 - Act as a response group towards suggesting interim solutions
- Timing and deliverables
 - The group will be initiated in January 2008 and will have a deadlines for reporting in June 2008 on the first and by September 2008 on the second.
 - This is to guarantee that we can provide a Call for participation for the 2009 programme to implement the proposed tools within the ITM programme in 2009 (likely under Preferential Support).
 - The response group would have a continuous activity during both 2008/09