High Beta (Weller)

- Preparation of global/local confinement datasets (LHD, W7-AS)
- Dependence on configuration, equilibrium effects
- MHD stability effects, MHD DB

- W7-AS: 2 high beta survey datasets released (various config., global conf.)
- LHD: 1 dataset (R_{ax}=3.6m, A_p=5.7) : official release pending,
-       1 further dataset (Rax=3.6m, Ap=6.1) prepared for ISCDB
- 1 survey subset (7th+8th camp., various configurations) revised,
       now: 3 survey datasets (7th-10th camp., R_{ax}=3.6m, A_p=5.7,6.1,6.5)
- Beta re-calculation: "low-beta formula" used for low-beta LHD, "normal formula" for all other cases (but original values kept for high-beta)

→good agreement between re-calculated and original values for W7-AS and LHD datasets

- **High beta data analysis issues further discussed** (mainly volume, LCFS position)
    - W7-AS approach: contact with PFCs → constraint for VMEC boundary
        (pressure maintained in stochastic region, $\lambda_e < L_c$)
    - LHD approach:
        - ✓ edge becomes stochastic but pressure exists up to or beyond LCFS modelled by HINT ($a_{eff,vac}$ better than $a_{eff,VMEC}$)
        - ✓ **a_{eff} (99% P contour by Thomson) used for detailed confinement studies**

- LHD revised high beta survey dataset(s) (7th-10th): operational boundaries discussed
- LHD: 2 sets of detailed analysis are available to study local transport and configuration effects
- **Beta dependence of H_ISS95 in LHD (degrading) and W7-AS (improving (?)) :**
    effect of well/hill ? , "same iota with different well" exp. possible in TJ-II

QA
- Kinetic beta – diamagnetic beta (Watanabe's talk)

- Remarks on high beta datasets extensions
  - Re-consideration of parameter definition
- Global confinement : datasets should include detailed parameter scans
- Local confinement : only few examples of profiles from W7-AS

Further extension
- Fast MHD crashes in W7-AS (DB was compiled)
- Magnetic fluctuation DB

QA
LCFS : shear layer location for identification of a_{eff} ? (Hidalgo)

What Parameters are necessary and their definition (Watanabe)

- Change of configuration parameters (e.g. a_p) due to beta
    - low beta : a_p of vacuum, high beta : $W_{pe99\%}$
- Definition of <beta> : an alternative approach based on kinetic data proposed
- Dependence of heating power on configuration and beta discussed

- QA
- Non-thermal pressure, outward shift by parallel pressure (new version of VMEC?)
- Mapping ?

Stochastic region (HINT, Suzuki)

Collisionality, ion orbit width → key role, answer

Role of stochastic region at different configurations, γ-scan (HINT) desired

•Active control of magnetic axis position (vertical field control) implemented in HINT

•Provide understanding on configuration dependence

•Impact on definition of LCFS

•HINT vs VMEC : some discrepancy (VMEC, overshifted),
        due to the boundary condition (perfect conducting wall) ?
            homework !

HINT modelling for W7-AS (Geiger)

Contact persons
A.Weller (W7-AS), K.Y.Watanabe, S.Sakakibara (NIFS)
J.Geiger   Y.Suzuki

Scope of MHD DB (Sakakibara→Suzuki)
•Common understanding of MHD activities and its effects
  on global and local transport
• databases for saturation levels and onset parameters

•Fluctuation data (magn., ECE, SX ...)
•Index of fluctuations?
•Plasma and configuration parameters
  •Local parameters around the resonance in addition to the global ones
  •$<\beta>$, β_0, I_p, S, D_I, D_R, $d\beta/dr$, d(iota)/dr, V" etc (profiles?)
  •Parameters required for stability calculation should be prepared
•Advanced analysis (comparison with radial structure and growth rate of the mode)
•Compilation of LHD data and CHS data in progress