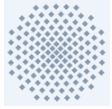


## Predictive transport code (Turkin)

- Scenario editor, TRAVIS (ECRH/ECCD), NBI(NBI/NBCD), NC-DB, MCDB, MCONF(geometry module), Equilibrium/function parameterization, AN
- (state of the art) NC confinement, current evolution, ECCD, NBI(2000-3000 pencil beams), profile collection initiated
- Extend NC-DB, attached to MCDB
- Function parameterization for equilibrium/beta effects for ECRH
- **Proposal for benchmarking thermal/full transport matrix:**
  - numerical exp. using predictive modelling
  - LHD(DCOM-NNW), TJ-II(MOCA)
  - Test case (LHD 3.60m) [**already sent to Murakami**] : comparison with ISS04
  - TJ-II [**Tribaldos**]



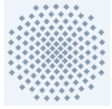
## Hierarchy-integrated code (Sato)

### •TASK3D

- EI(current), ER( $E_r$ , NC: Shaing's single helicity model), improving Newton Solver (using domain-decomposition method)
- $E_r$ , iota development, w-w/o re-calculation of MHD equilibrium
- T, n, iota,  $E_r$  will be calculated simultaneously and the fast Newton solver will be added to TASK3D
- Addition on impurity modules and heating modules to TASK3D

### QA

- How do you select the correct root among multiple ambipolar  $E_r$  ?  
Currently, maximum  $E_r$  is selected.
- Particle balance
- Evolving equilibrium: how often for re-calculation ? 100 ms and 10 ms at this moment.



- Theory Based Turbulent Transport Modelling (Guttenfelder)
  - Quasi-linear in nature (Weiland, IFS-PPPL, GLF23)
  - Equilibrium ExB shear is a significant effect
  - Sub-dominant effect from ZFs

GS2 application to HSX(QHS)  
Weiland model – toroidal ITG/TEM

Ideas for future work

3D calculations of growth rates & QL transport scaling with gradients  
Comparison of QL transport to exp. transport  
Comparison of  $\gamma_{lin}$  &  $\omega_{ExB}$   
Comparison to turbulence measurements

GK simulation benchmarking (Mikkelsen, CWGM1) : experimentally-relevant situation