Some transport presentations at the 14th International Stellarator Workshop, 22-26 September 2003, Greifswald

Submitted papers (not the viewgraphs or posters) are at
http://www.ipp.mpg.de/eng/for/veranstaltungen/workshops/stellarator_2003/
A CD of available papers will be distributed in November

Talmadge HSX: TS Te(0) and diamagnetic stored energy increase roughly *linearly* with power, and roughly independent of density – except in configurations that poorly confine trapped particles. The first pass ECH fraction increases with density, but antennas inside the torus don't see a lot of scattered power so they believe the power is absorbed. Modeling with chi=C/ne.

Gerhardt HSX: biased probe drives flows; flow damping is reduced in quasi-symmetric configurations. Calculations of expected flow rise and fall timescales are within a factor of 3-4 of what is measured.

Hron and Pedrosa Biased probe flow experiments in CASTOR and limiter-biasing in TJ-II. Need anomalous flow damping in CASTOR. Limiter biasing can create enhanced confinement regime – and sometimes reduced edge turbulence - in TJ-II; no comparison with theoretical flow damping yet.

Alejaldre(Hidalgo) Long overview of TJ-II results.

Ascasibar TJ-II confinement scalings; similar to ISS-95 with all metal wall, but a larger density exponent (0.5 goes to 1.0) with boronized walls.

Kreter W7-AS 'optimized confinement' regime ('narrow' density profiles) re-visited experimentally and re-analyzed; good agreement with neoclassical Er. Claim Er reduces turbulence-driven anomalous transport in outer plasma, but provide no evidence.

Kernbichler 'Stochastic mapping technique' shows promise for speeding up neoclassical transport calculations that average over orbit trajectories.

Yamada ISS-95 effort is being revived to add LHD, TJ-II, more W7-AS. Three data sets have very similar density, $B_{tor}$, $P_{heat}$ (and iota?) dependences: W7-AS, LHD, and the group of Heliotron-E, ATF, CHS; the coefficient out front is not 'predicted' by the remaining size scalings in ISS-95.

Nishimura Proceeding along Sugama/Nishimura path to look at impurity transport and bootstrap current calculation.

Petersen LHD density limit is set by radiation collapse, which can begin when $P_{rad}$ fraction is only 30%, and ends with an axisymmetric MARFE on small-R walls.

Funaba LHD: co- and counter-NBI produce different Te(r). Flatter Te with counter, see coherent MHD?

Takeiri eITB in LHD experimental overview

Yokoyama Experiment qualitatively confirms theoretical dependence on helical ripple of the density threshold for getting electron root in LHD eITB.

Fujisawa Text available online is mostly about N-ITB (a.k.a., electron root ITB), but the presentation included more on fluctuation correlations with dual HIBP on CHS.

Sano and Mizuuchi Heliotron-J (Kyoto) 'Spontaneous confinement transition' in narrow iota windows: H-alpha drop, density rises, H_ISS-95 rises. Minimum density needed. Divertor strike point shifts.