S. Lisgo I-3 "OEDGE Modeling of Neutral Pressures in the Alcator C-Mod Divertor"

- Used Stangeby's Onion Skin Model to integrate plasma particle, momentum, and energy balance equations along SOL field lines,
- EIRENE Monte Carlo neutral transport code provides sources / sinks due to neutrals.
- Boundary conditions set at target by Langmuir probe data.
- **Confront as much diagnostic data as possible.**
- Modeled a C-Mod discharge from Pitcher's divertor bypass experiments.
  - Initial attempts yielded neutral pressure $10\times$ too low.
- Used spectroscopic data to develop description of detached inner leg.
- Included trapping of Ly-α & 3-D structure of divertor.
- $\Rightarrow$ reduced discrepancy to < 2.
- 90% of neutrals came from PFR $\Rightarrow$ need much more focus there!

G. Kirnev O-8 “Edge Code Simulations of SOL Flows in JET”

- Used EDGE2D to simulate $M \sim 0.5$ flows in JET SOL,
- Same premise as LaBombard: flows are result of ballooning-like transport preferentially dumping plasma into outboard midplane SOL.
  - This effect alone gives $\Delta M = 0.15$.
- Gets $M = 0.4$ by including radial convection, outward on LFS & inward on HFS.
  - Also, $D_\perp \propto 1/B$.

B. Carreras R-2 "Cross-Field Transport: Experiment and Theory"

- Began by discussing observed statistics of cross-field transport,
  - E.g., looks Gaussian in shear layer near separatrix,
  - Becomes more skewed, with longer decorrelation times, farther out.
- Probability distribution functions from C-Mod, TJ-II, W7-AS match that of Bramwell, Holdsworth, & Pinton (universal).
- Discussed GPI observations of blobs,
- Coupling between sheared flows $\leftrightarrow$ Reynolds stress $\leftrightarrow$ turbulence suppression.
- Noted that effective diffusivity (due to blobs) increases with n/n_{GW}.

T. Rognlien O-10 "Simulations of Plasma Fluxes to Material Surfaces with Self-Consistent Edge Turbulence and Transport for Tokamaks"

- Couple BOUT (3-D fluid turbulence) & UEDGE (2-D fluid transport).
- BOUT evolves turbulence for $50 \rightarrow 100$ μs & passes fluxes to UEDGE,
- UEDGE evolves plasma profiles for > 10 ms.
- Run until reach statistical steady state.
- Only have converged result for coupled particle balance equation,
  - Diffusivity strongly ballooning,
  - Significant inner wall recycling.
- Have not been able to get converged results with coupled temperature equations.

E. Hollmann P1-21 "Measurement and Modeling of Hydrogen Vibrational and Rotational Temperatures in Weakly-Ionized Hydrogen Discharges"

- Models of H_2 behavior incorporating vibrationally excited states have been improving, mostly due to better experimental & theoretical cross sections,
- But, H_2 in fusion divertors likely also rotationally excited,
- Hollmann measured T_{vib} and T_{rot} in PISCES-A,
- Estimated rotationally resolved rate coefficients.

K. Matyash P3-1 “Modeling of Parasitic Plasma Under Divertor Roof Baffle”

- ASDEX-U sees carbon deposition *underneath* divertor baffle,
- Probes show 15 eV, 10^{12} cm^{-3} plasma there,
- Radiation from divertor targets is ionizing neutral gas under baffle!
  - Either photoionization,
  - Or, electron impact ionization by photoelectrons.
- Successfully modeled these processes with a PIC code.

P. Stangeby / S. Lisgo P3-51 "Reconstruction of Detached Divertor Plasma Conditions in DIII-D Using Only Spectroscopic and Probe Data"

- Objective: develop interpretive model of divertor plasma that does not rely on Thomson Scattering,
- Used only probe I_{sat}, D_α, D_β, D_γ to construct T_e variation along inner divertor field line in detached operation.
- Examined SAPP L-mode plasmas in DIII-D, compare results with available DTS data.
- Worked pretty well.