

Edge Turbulence and Transport



- Fundamental turbulence studies

 - Electrostatic*

 - Electromagnetic (**need magnetic sensor upgrade**) i.e. Beta scan*

 - Comparison to global confinement scaling and codes (Xu, Candy, etc)*

 - Test Greenwald's ideas on density limit*

- L-H mode transition physics

 - Energy cascading*

 - Velocity shear stabilization of turbulence*

 - Comparison to codes (Xu, Candy, etc)*

 - Reynolds Stress measurements and interpretation*

- Intermittency

 - Characterization and comparison to DIII-D (**need Te upgrade**)*

 - Comparison to global confinement scaling*

 - Address origin of intermittency by comparison to UEDGE and BOUT and other analytical/numerical predictions*

Work in collaboration with Tynan, Crocker, Zweben, Maqueda and others

Fundamental Turbulence Studies: Energy Cascading (Tynan)



- Infer Turbulence Energy Transfer from 1-d field Model
 - In k-space from $\tilde{n}(r, \theta, t)$ gas puff imaging
 - In f-space from $\tilde{n}(\mathbf{x}_0, t)$ probe data
- Compare Energy Transfer & Reynolds Stress During L-H Transition
 - Do Energy Transfer & Reynolds Stress Viewpoints Agree ?
- Infer Velocity fluctuations from 2-d density fluctuations & compare w/ probe V_{ExB}
 - Would Allow 2-field models, transport fluxes from Images

Work in collaboration with Tynan, Crocker, Zweben, Maqueda and others

Diagnostics, Discharges and Machine Time



- L and H-mode discharges at power levels compatible with probe head
- Compare data to other edge and turbulence diagnostics
- Enough GOOD L and H-mode discharges to complete above work (2 days)