

Plasma and wall particle balance

- Particle control
 - Particle balance (need to know sources, sinks, transport)
 - Wall material: graphite + SS
 - Particle exhaust: pumping, de-saturated wall, lithium-coated wall, liquid lithium divertor
 - Divertor: geometry - low flux expansion (low κ , δ), high flux expansion (high κ , δ), double null
 - Particle measurements:
 - Atomic D: D_{α} , Ly_{α} at various locations (recycling), estimate from neutral pressure
 - Molecular D_2 : Fulcher band (spectroscopy), neutral pressure (mol. flux)
 - He: He II emission at various locations (have only 2 filters)
 - Li: fluxes from Li I emission (spectroscopy), Li III density (Li-CHERS)
 - C: fluxes from C I, CII, CIII spectroscopy, C VI density (CHERS)
 - Heating: ohmic, NBI
 - Fueling
 - avoid HFS fueling
 - SGI is the best candidate (well known flow rate)
 - Measurements phase: ramp-up, steady-state

- How to accomplish - tools
 - Use edge diagnostics
 - Use simulation codes
 - 0D, 1D particle balance models
 - UEDGE and DEGAS 2 modeling