# Filament Transport in the SOL of ASDEX Upgrade


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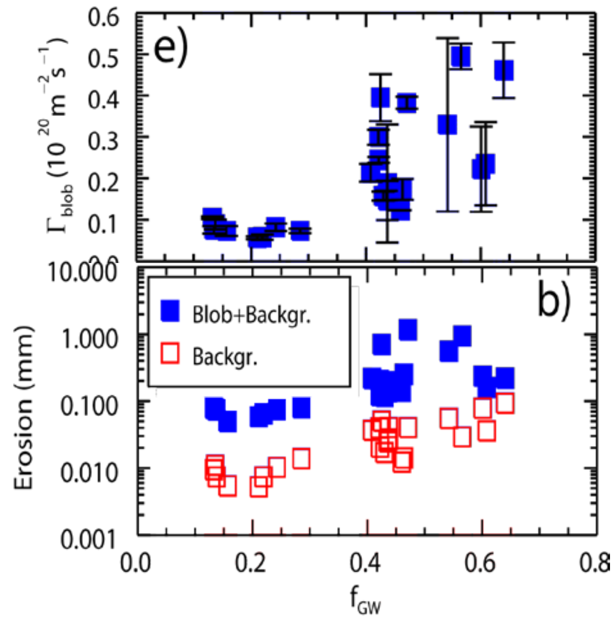
## Estimation of Blob-induced Gross Erosion in Different Blob Regimes

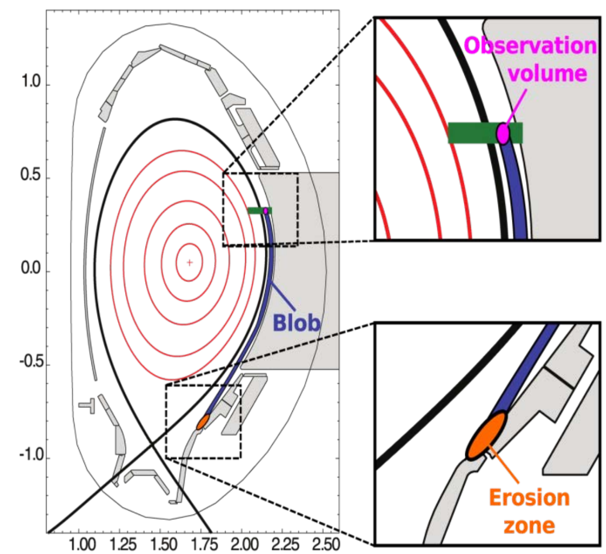
**Transport regimes of SOL blob filaments**

- Blobs measured with Li-BES
- Size and velocity of blobs agree with sheath-connected regime at low densities
- Dramatic increase of convective blob transport at higher densities

**Estimation of blob induced gross erosion*):**

- Definition: $E = \frac{1}{2} c_s \delta n Y \Delta t / n_{PFC}$
- 2% of a time trace consists of blobs
- AUG plasma with a "pulse length" of one full year
- w/o redeposition, w/o impurities
- Erosion up to 1 mm: critical for first wall!




## Conclusion

- Blob dynamics at low density indicates warm ion sheath-connected scaling
- Blob properties change dramatically at high density (resistive blob regime)
- Blob induced erosion for AUG conditions up to 1 mm and larger than background erosion

*) Assumptions:

- Blob touches observation volume and erosion zone for time span $\tau_{blob}$
- Background: $T_i$ = 30 eV, $T_e$ = 10 eV
- Blobs: $T_{i,blob}$ =100 eV, $T_{e,blob}$ = 33 eV
- Full year operation ($\Delta t$ = 31.536 ·$10^6$ s)
- $n_{PFC}$=6.322 ·$10^{28}$ m$^{-3}$ (tungsten)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