First operational phase (OP1.1): five graphite inboard limiters define a 3D helical scrape off layer (SOL)

Plasma parameters strongly correlated to magnetic topology

Comparison with IR confirms heat load asymmetry \( \sim L_c \)

Near and far SOL feature different power widths \( \lambda_{\text{all}} \)

Scan of anomalous \( D \) shows somewhat simple SOL scaling of power flux level \( q_{\text{peak}} \) and power width \( \lambda_{\text{all}} \)

\( \lambda \) increase causes stronger poloidal localization of impurities and line emission due to local compression of long \( L_c \)

Power flux mitigation by radiative edge cooling in future island divertor scenarios \( \rightarrow \) strong accumulation in 5/5 islands

Conclusion:
- Startup field configuration facilitates the investigation of links between PSI and magnetic topology
- 3D modeling and modeling results show a strong correlation between PSI and changes in magnetic topology
- Downstream power \( \lambda_{\text{all}} \) related to upstream \( T_e \), decreases \( \lambda_{\text{all}} \) by scaling factor of 2.5-3.5
- Seeded impurities concentrate in longer flux tubes, stronger accumulation for increased \( \lambda_{\text{all}} \) and clear sub-confinement expected for considered 5S standard island divertor scenario

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