

Abstract Submitted  
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**Heat flux and plasma flow in the scrape off layer on the spherical tokamak QUEST with inboard poloidal field null configuration<sup>1</sup>** TAKUMI ONCHI, HIDEKI ZUSHI, KISHORE MISHRA, KAZUAKI HANADA, HIROSHI IDEI, KAZUO NAKAMURA, AKIHIDE FUJISAWA, YOSHIHIKO NAGASHIMA, MAKOTO HASEGAWA, ARSENY KUZMIN, Kyushu University, KENICHI NAGAOKA, NIFS, QUEST TEAM — Heat flux and plasma flow in the scrape off layer (SOL) are examined in the inboard poloidal null (IPN) configuration on the spherical tokamak (ST) QUEST. In the ST, trapped energetic electrons on the low field side are widely excused from the last closed flux surface to SOL so that significant heat loss occurs. Interestingly, plasma flows in the core and the SOL are also observed in IPN though no inductive force like ohmic heating is applied. High heat flux ( $>1$  MW/m<sup>2</sup>) and sonic flow ( $M > 1$ ) in far-SOL arise in current ramp-up phase. In quasi-steady state, sawtooth-like oscillation of plasma current with 20 Hz has been observed. Heat flux and subsonic plasma flow in far-SOL are well correlated to plasma current oscillation. The toroidal Mach number largely increases from  $M_\varphi \approx 0.1$  to  $\approx 0.5$  and drops although the amplitude of plasma current is about 10 % of that. Note that such flow modification occurs before plasma current crash, there may be some possibility that phenomena in the SOL or the edge trigger reactions in the core plasma.

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