

# F02

## Liquid metal limiter

FTU Experimental Campaign 2019-C1-A  
Thursday 28/03/2019 (Early & Late)

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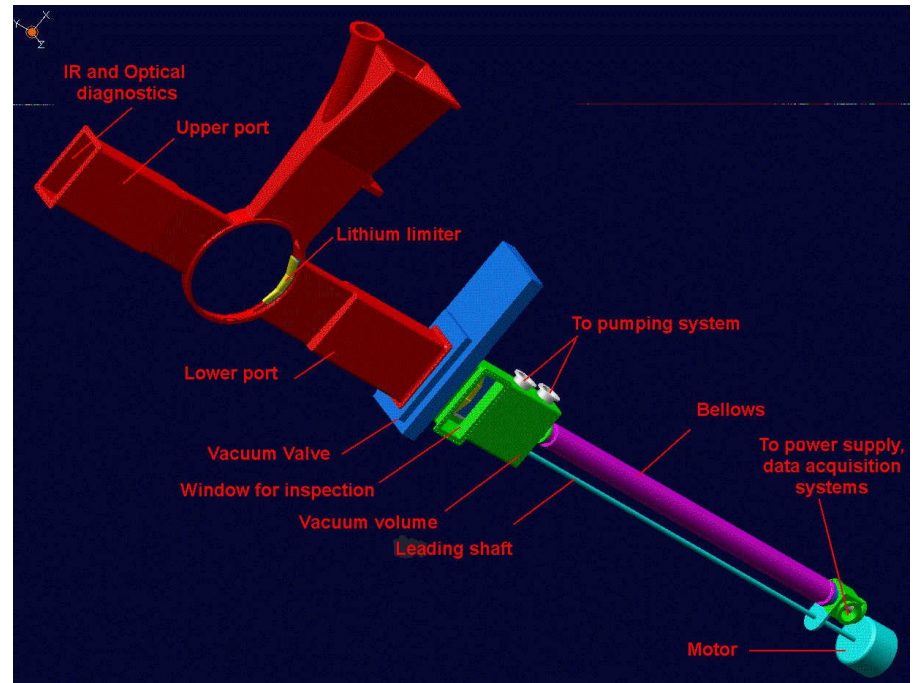
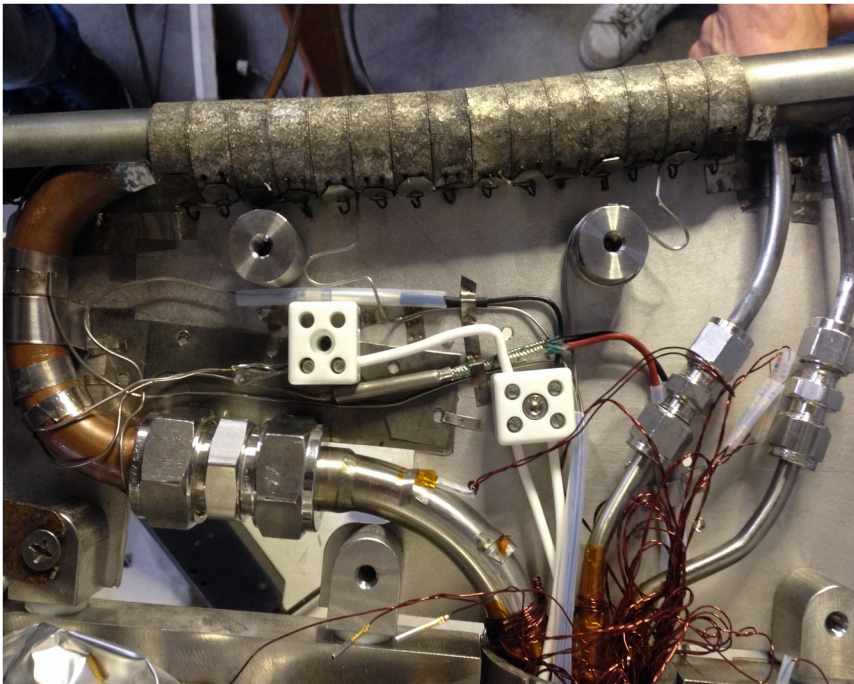
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# Background



- FTU is the only fusion relevant devices equipped with a liquid tin limiter.





## Goals

- Investigation of the liquid tin limiter in presence of high heat loads for longer discharges and improved diagnostic capabilities.
- More quantitative determination of plasma contamination, tin transport mechanisms and scrape-off layer characterization.

## Strategy

- The power on the limiter will be progressively increased in standard ohmic discharges by moving the TLL position
- A systematic scan of the scrape-off layer and dedicated analyses of plasma contamination and tin transport mechanisms will be performed
- Visible, UV and soft-X diagnostics will be fundamental during these activities



# Requirements

## Machine

|   |           |
|---|-----------|
| Toroidal magnetic field $B_T$ (T):                  | 5.3       |
| Plasma current $I_p$ (MA):                          | 0.5 – 0.7 |
| Electron density $n_e$ ( $10^{20} \text{ m}^{-3}$ ) | 0.6 – 1.5 |

## Diagnostics

Electron density and temperature profiles,  $D_\alpha$ , Mirnov coils, Langmuir probes, bolometry, Visible and VUV spectroscopy, Soft-X, visible camera, fast IR-camera, bremsstrahlung

## Modeling

JETTO



# Pulse Plan

A) 5.3 T / 500 kA ,  $n_e = 0.6 \text{ e}20\text{m-}3$ , Limiter -> outside the VV

B) 5.3 T / 500 kA ,  $n_e = 0.6 \text{ e}20\text{m-}3$ , Limiter -> 1.5cm LCMS

C) 5.3 T / 500 kA ,  $n_e = 0.6 \text{ e}20\text{m-}3$ , Limiter -> LCMS

D) 5.3 T / 500 kA ,  $n_e = 1.0 \text{ e}20\text{m-}3$ , Limiter -> LCMS

A) 5.3 T / 700 kA ,  $n_e = 1.0 \text{ e}20\text{m-}3$ , Limiter -> 1.5cm LCMS

B) 5.3 T / 700 kA ,  $n_e = 1.0 \text{ e}20\text{m-}3$ , Limiter -> LCMS

C) 5.3 T / 700 kA ,  $n_e = 0.8 \text{ e}20\text{m-}3$ , Limiter -> LCMS (2X)

D) 5.3 T / 700 kA ,  $n_e = 1.5 \text{ e}20\text{m-}3$ , Limiter -> LCMS (2X)