



WP PWIE SPA1 (2023): KIPT

D005: Qualification of current baseline materials under transient (HHF plasma load with QSPA) and steady state loading (PSI-2, JUDITH) (KIPT)

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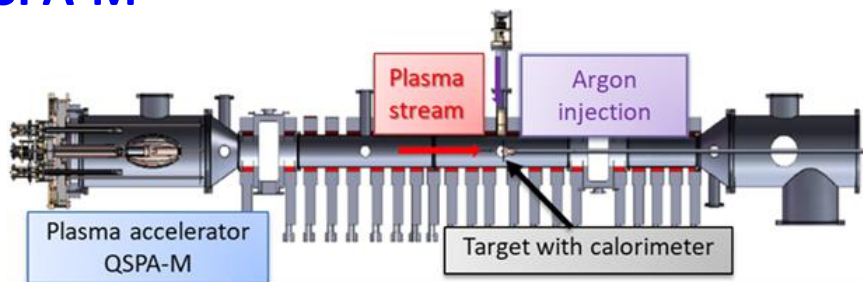


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SPA3: Experimental facilities: QSPA Kh-50; QSPA-M

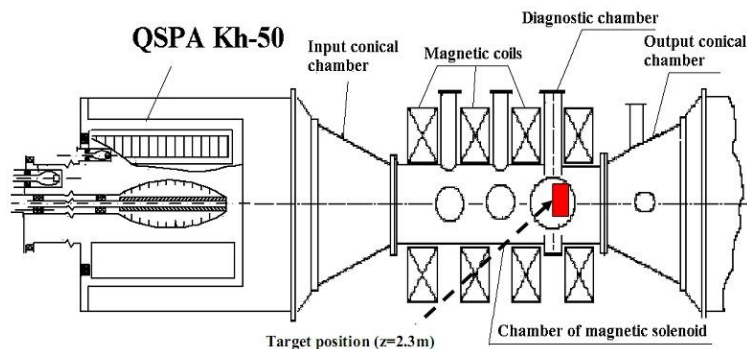


QSPA-M



Plasma energy density	0.1-1 MJ/m²
Plasma load duration	0.1 ms
External magnetic field	0.8 T
Diameter of plasma stream	6 cm

I.E. Garkusha et al 2017 Nucl. Fusion 57, 116011;
I.E. Garkusha et al 2019 Nucl. Fusion 59, 086023



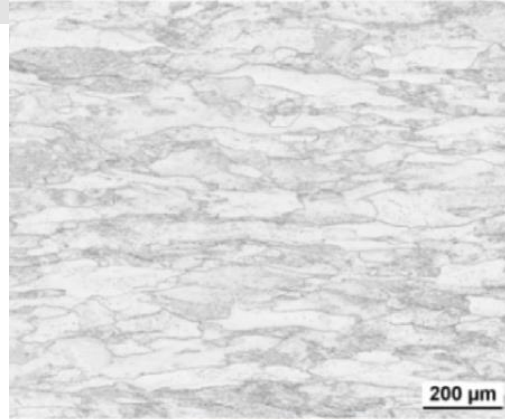
Plasma energy density	0.1–2.2 MJ/m²
Plasma load duration	0.25 ms
Diameter of plasma stream	15 cm

V A Makhlai et al 2020 *Phys. Scr.* T171, 014047
V.A. Makhlai et. al. 2021 *Phys. Scr.* 96, 124043

Experiments were stopped in the end of February 2022.

<https://euro-fusion.org/eurofusion-news/eurofusion-stands-in-solidarity-with-research-in-ukraine/>

Qualification of current baseline materials



Tungsten samples were supplied by Plansee AG (Austria), prepared and delivered from Forschungszentrum Julich (Germany). Samples have sizes of $12 \times 12 \times 5 \text{ mm}^3$. **the transversal (T) grain orientation.**

- T tungsten demonstrated the best resistance to applied QSPA plasma loads.
 - The testing of samples will be performed under different loadings later (incl. different gases mixtures, pulses duration, number of pulses, synergetic loads, etc.)
 - Experiments will be continued when safe situation at KIPT achieved
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- The summarizing and analysis of the earlier results of exposures will be continued.
 - Additional shielding due to the formation of a dense H-Ar plasma layer in front of the exposed surface will be discussed. (Abstract was accepted for FEC-2023)



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Inclusion