**TG Edge&Divertor**

**Subgroup Fueling & Exhaust**

**He exhaust proposal discussion**

**09.03.2022 from 16h00 to 16h45**

**Attendees:**

Stepan, Thilo, Victoria, Dieter, Kenneth, Felix

**Meeting objective:**

Sketch of helium core transport with puff modulation (Thilo), and continue the discussion about He transport (proposal overview of Victoria, Felix and Thilo)

**Core transport of He:**

In the previous meeting Dirk pointed out that it is unclear how the He transport can be measured in the core. Thilo presents how this is foreseen with the CXRS measurement. A correlation of the modulation in He beam voltages with passive CXRS emission in data from the last campaign is found. Feasibility study is foreseen in a commissioning proposal. This means that the CXRS diagnostic (operated by Oliver Ford) is interesting to study He (or other impurities) transport in the core.

Starting from the He continuity equation, Thilo presents on what the convective and diffusive transport terms are depending. Synthetic data of this kind of transport is obtained with pySTRAHL.

The experimental He data of OP1.2b are not detailed enough; further experiments are required to validate the STRAHL simulations. Main requirement is a periodic puffing with sufficient beam coverage, meaning this proposal can be combined with others.

One of the big advantages during the upcoming campaign will be the presence of the cryo pumps as with only the turbo pumps all He which is puffed into the reactor, will stay inside.

**Victoria, Felix, Thilo on He transport (continued discussion of last meeting):**

Starting from the outcome of the discussion last time, Victoria presents an update about the He transport proposal. In order to reduce the number of required discharges, attention is put on how to combine different goals in one discharge. Therefore, Victoria proposes to add a purely NBI part at the end of discharges to enable core studies.

There is a discussion about which spectrometers are available for He studies. Victoria brings up that the filterscope had some issues during the last campaign. Stepan looked to this and normally the filterscope should work well for He in the upcoming campaign. An important tool at the divertor is the divertor spectroscopy system which is able to measure He and exists of 16 spectrometers. Victoria also points out that the Jülich spectrometer, on the other hand, will mainly focus on measuring intrinsic impurities (carbon).

Thilo is wondering if different gasses can be injected together. Victoria clarifies that this is possible.

Felix prefers to compare the impact of injecting He from different locations. Therefore, at least 1 discharge with another puffing location should be present.

Thilo is working on his proposal in a shared document which he will make accessible for everyone so that it is easier to have as complete information as possible in it.

**Action items (same as last time):**

All:

How can we increase divertor plugging?

Stepan:

Work on more detailed proposals with diagnostics and discharges in mind.

How is good He retention defined? How is it measured?

Thierry & Georg:

Work on and extend a concise overview of neutral gas systems relevant to the group.

Next meeting is as scheduled on March 16th.