**TG Edge&Divertor**

**Subgroup Fueling & Exhaust**

**He exhaust Kick off**

**09.02.2022 from 1600 to 1705**

**Attendees:**

Thierry, CP, Dirk, Erik, Victoria, Dieter, Thilo, Stepan, Felix, Oliver

**Meeting objective:**

Bring everyone on the same page, define roles, project goal, communication and documentation.

**Introduction round:**

Stepan is currently preparing the commissioning of the WISP gauges. He would like to optimize the He exhaust at W7-X with a focus on how particles move from the SOL to the pumping gap.

Dieter is getting started with EMC3-EIRENE modeling and would like to look into sub-divertor modeling and focus on neutral exhaust.

Erik is working on the He beam and brings knowhow in spectroscopy and what’s possible in regards to He injections with the divertor gas inlet system.

Oliver and his group have worked on He exhaust at LHD, ASDEX,DIIID and brings overarching experience.

Thilo is a PhD and is working on CXRS measurements for core transport studies. He is also getting started with EMC3-EIRENE.

Victoria is generally interested in He transport, with a focus on retention and exhaust optimization.

Felix forms the direct link to TG Impurity, whose coordinator he is. As the most relevant impurity he is interested in He transport from the core to the edge and would like to develop a reactor scaling for He exhaust.

CP brings expertise in the cryo pump and would like to try Ar frosting for He pumping, however he lowered expectations about efficiency. He is interested in the related physics as well as PWI i.e. He sputtering.

Dirk would like to get an overview of the proposal process and reminded everyone that proposals should be realistic. Physics wise he is interested in the He core particle confinement time.

Thierry is interested tau\_p and tau\_p\* measurement and understanding the He fuel cycle.

**Feedback round:**

It was discussed if the new cryo pumps could create enough flow on H to influence He. With the pressures at the pump gap we are likely in the molecular flow regime and influence from one particle to another is likely low. A good metric would be the mean free path of neutral particles.

Dirk pointed out that that we shouldn’t puff too much He in discharges and that we need a diagnostic and system list of what is available to us.

Felix commented on the continuous colissional flow vs molecular flow and it’s effect on the pumping speed.

For a discharge day, we can expect around 30, 10 s discharges with maybe a long 100 s discharge at the end for OP2.1

Victoria would like to study and compare He with other impurities.

The He NBI will be available in OP2.2, therefore experiments with He NBI should be included in the proposals.

An idea to get He in the core was to start a plasma up in He and then fuel it with H. However the particle exhaust is likely so low that at the end of the discharge the main plasma species will still be He.

Felix was wondering how one could measure the He concentration in the plasma.

**Action items:**

Next meeting is as scheduled on February 16th. Drafts for proposals will be prepared based on the assignment of the main topics and discussed in that meeting. Agenda will be published on Monday.