

# Seminar

---

---

## Institute for Plasma Research

---

---

**Title :** Towards steady-state tokamak operation: recent current drive experiments on ASDEX Upgrade and challenges for neutral beam current drive on DEMO and beyond

**Speaker:** Dr. Christian Hopf  
Max Planck Institute for Plasma Physics,  
Germany

**Date :** 10th January 2020 (Friday)

**Time :** 02:00 PM

**Venue :** Seminar Hall, IPR

### **Abstract :**

The stationary operation of a tokamak reactor requires fully non-inductive current drive (CD), that is provided by the intrinsic bootstrap current in combination with CD by heating systems such as neutral beam injection (NBI/NBCD) or electron cyclotron heating (ECH/ECCD). Scenario development therefore requires models for these non-inductive currents that have been checked against experimental results on present day machines. This talk will present such quantitative analysis of an almost fully non-inductive discharge on ASDEX Upgrade at normal plasma current.

Applying CD on a steady-state tokamak power plant or DEMO also necessitates high power efficiency of the CD systems(s). The talk will discuss the implications this has for a current-driving neutral beam injection system and the envisaged new technologies to meet the requirements.

---