Contribution ID: **452** Type: **Oral**

Effects of External Heating Schemes and Magnitude on Thailand Tokamak Plasmas

Monday, 21 May 2018 15:30 (15 minutes)

Simulations of Thailand tokamak plasmas are carried out using a CRONOS integrated predictive modelling code. The code is designed in a modular structure, consisting of a 1D transport solver with general 2D magnetic equilibria, and including of several heat, particle and impurities transport models as well as heat, particle and momentum sources. In this work, a combination of a mixed Bohm/gyro-Bohm anomalous transport model and an NCLASS neoclassical transport model are used to calculate plasma core diffusivities. The boundary condition of the simulations is taken to be at the top of the pedestal, which is based on an international multi-tokamak scaling. This set of code is used to predict plasma profiles including current density, electron and ion temperatures, etc. A sensitivity analyses on plasma performance of the future Thailand tokamak is performed as external heating scheme, i.e. ICRH, ECRH and LH, and magnitude are varied. It is found that the transport barrier height at plasma edge and central temperatures are found to be sensitive to various parameters such as magnetic field, plasma current and heating schemes. The aim of this study is to identify the optimization point for operation of the tokamak.

Primary authors: BUARUK, Suphachok (Department of Physics, Faculty of Science, Prince of Songkla University); PROMPING, Jiraporn; Dr CHATTHONG, Boonyarit (Department of Physics, Faculty of Science, Prince of Songkla University)

Presenter: BUARUK, Suphachok (Department of Physics, Faculty of Science, Prince of Songkla University)

Session Classification: A4: Plasma and Nuclear Fusion

Track Classification: Plasma and Ion Physics, Nuclear and Radiation Physics