

# Flux-surface averaged radial transport in toroidal plasmas with magnetic islands

*Thursday 25 October 2018 14:00 (20 minutes)*

In toroidal magnetic confinement fusion research, one-dimensional (1D) transport models rely on one radial coordinate that labels nested toroidal flux surfaces. The presence of magnetic islands in the magnetic geometry does not impede making 1D transport calculations if the island regions are excluded and then, if necessary, treated separately. In this work we show a simple way to modify the flux-surface coordinate and corresponding metric coefficients when an island region is excluded. Comparison with the metrics obtained from Poincaré plots are shown, as well as applications to two types of plasma: Helic (TJ-II, CIEMAT, Spain), where the geometrical effects alone cannot explain the experimental results when islands move throughout minor radius; and Heliotron (LHD, NIFS, Japan), where we estimate the effect of possible heat losses in flux-gradient relations.

## Country or International Organization

Spain

## Paper Number

TH/P6-12

**Author:** Dr LÓPEZ-BRUNA, Daniel (EsLNF)

**Co-authors:** Dr LÓPEZ-FRAGUAS, Antonio (EsLNF); Dr MOMO, Barbara (ItRFX); Dr AURIEMMA, Fulvio (ItRFX); Dr PREDEBON, Italo (ItRFX); Dr SUZUKI, Yasuhiro (JpNIFS)

**Presenter:** Dr LÓPEZ-BRUNA, Daniel (EsLNF)

**Session Classification:** P6 Posters