## **STUDIES ON ADDITIONAL ELECTRICAL HEATING**

## OF THE HCLL TBM BREEDER ZONE

<u>H. Simon<sup>1</sup></u>, G. Aiello<sup>1</sup>, A. Morin<sup>1</sup>, F. Gabriel<sup>1</sup>, G. Rampal<sup>1</sup>, A. Li Puma<sup>1</sup>, J.F. Salavy<sup>1</sup>,

L.  $Cachon^2$ 

<sup>1</sup> CEA, DEN, DM2S, F-91191 Gif-sur-Yvette, France <sup>2</sup> CEA, DEN, DTN, F-13108 Saint-Paul-Lez-Durance, France

Corresponding author: helene.simon@cea.fr

The succession of various phases in ITER experimental campaign has lead to dedicating some European R&D activities on Test Blanket Modules (TBM) to some of these phases, namely H-H and D-T phases and their corresponding EM and IN TBMs. The scope of the present contribution is to report activities performed on the EM TBM for the H-H phase which is characterized by relevant D-T phase magnetic field, surface heat flux and disruption induced loads, but by a cold plasma. On one hand, H-H phase gives the opportunity of experiments and use of instrumentation which will not be possible in the irradiated environment of D-T phase. On the other hand, H-H phase specificity is a temperature level in the breeder zone much lower than in the D-T phase. Whether this feature jeopardizes the completion of H-H phase experimental general objectives is a question addressed in this work together with the relevancy assessment of providing additional electrical heating to the breeder zone. A technical solution for an electrically heated configuration of the breeder zone is provided with accompanying thermal analyses and preliminary design studies.