

PRELIMINARY UNCERTAINTY ASSESSMENT OF THE CONTAINMENT BEHAVIOR FOR THE PHEBUS FPT1 TEST

M. Angelucci, S. Paci

michela.angelucci@phd.unipi.it, sandro.paci@unipi.it

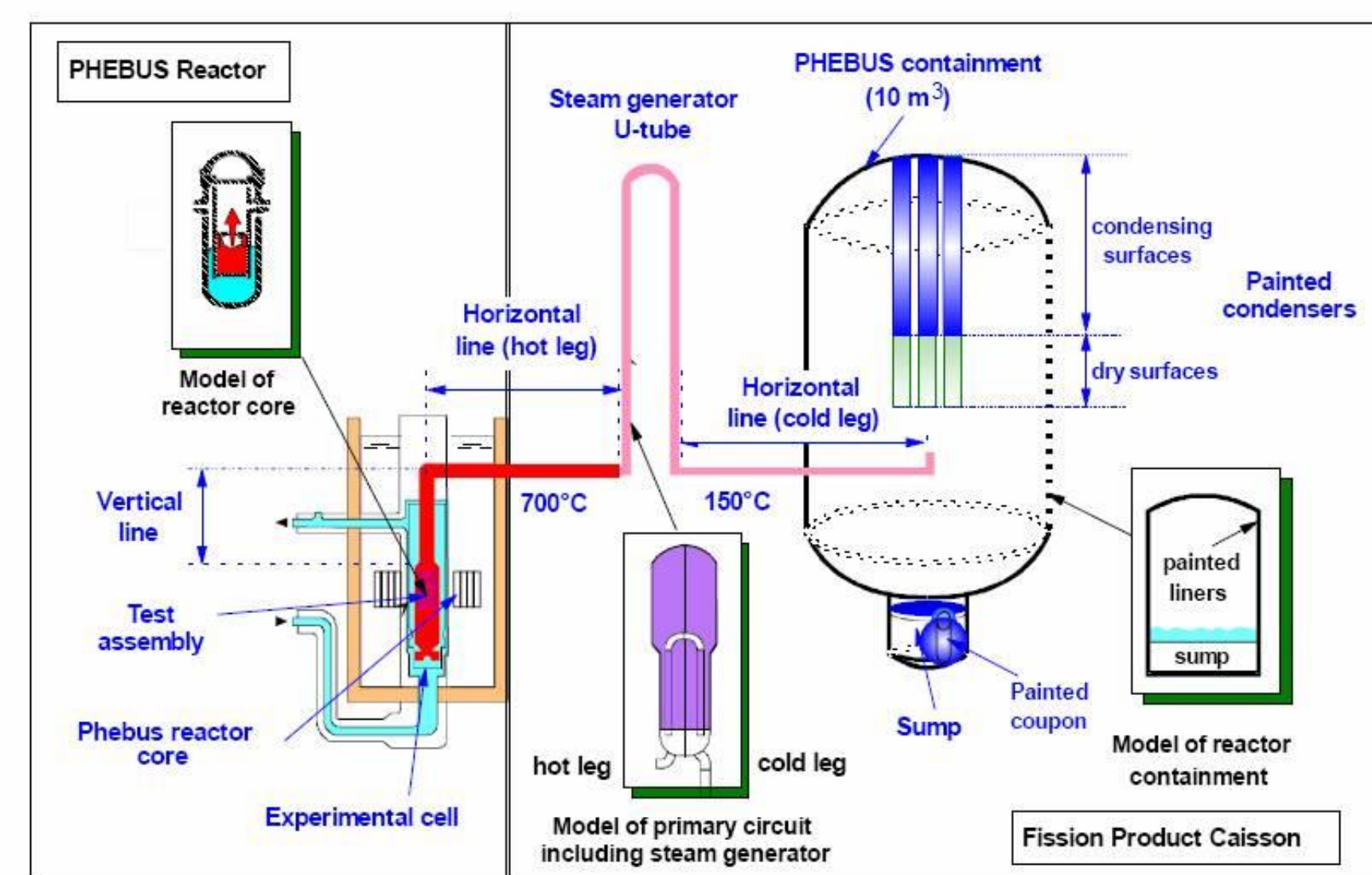


UNIVERSITÀ DI PISA

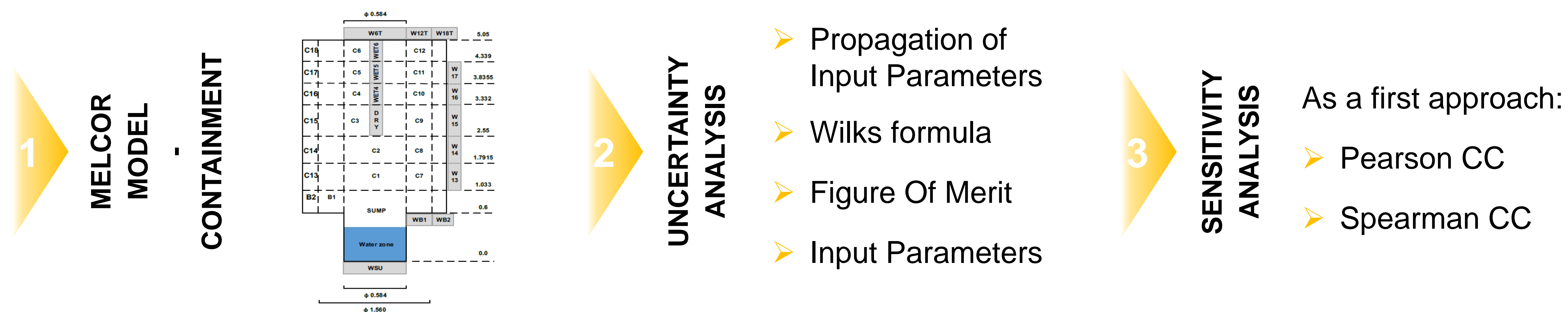
INTRODUCTION

Within the MUSA project, the PHEBUS FPT1 scenario was the subject of a training exercise for uncertainty analysis in severe accidents: the entire facility was modeled, and the first two phases of the test were simulated.

Complementary to the previous study, a preliminary uncertainty and sensitivity analysis of the containment behavior for the same experiment is proposed, through a standalone analysis of the containment itself. Considering its relevance in the safety assessment of a nuclear power plant, the focus is set on the possible source term to the environment.



METHODS

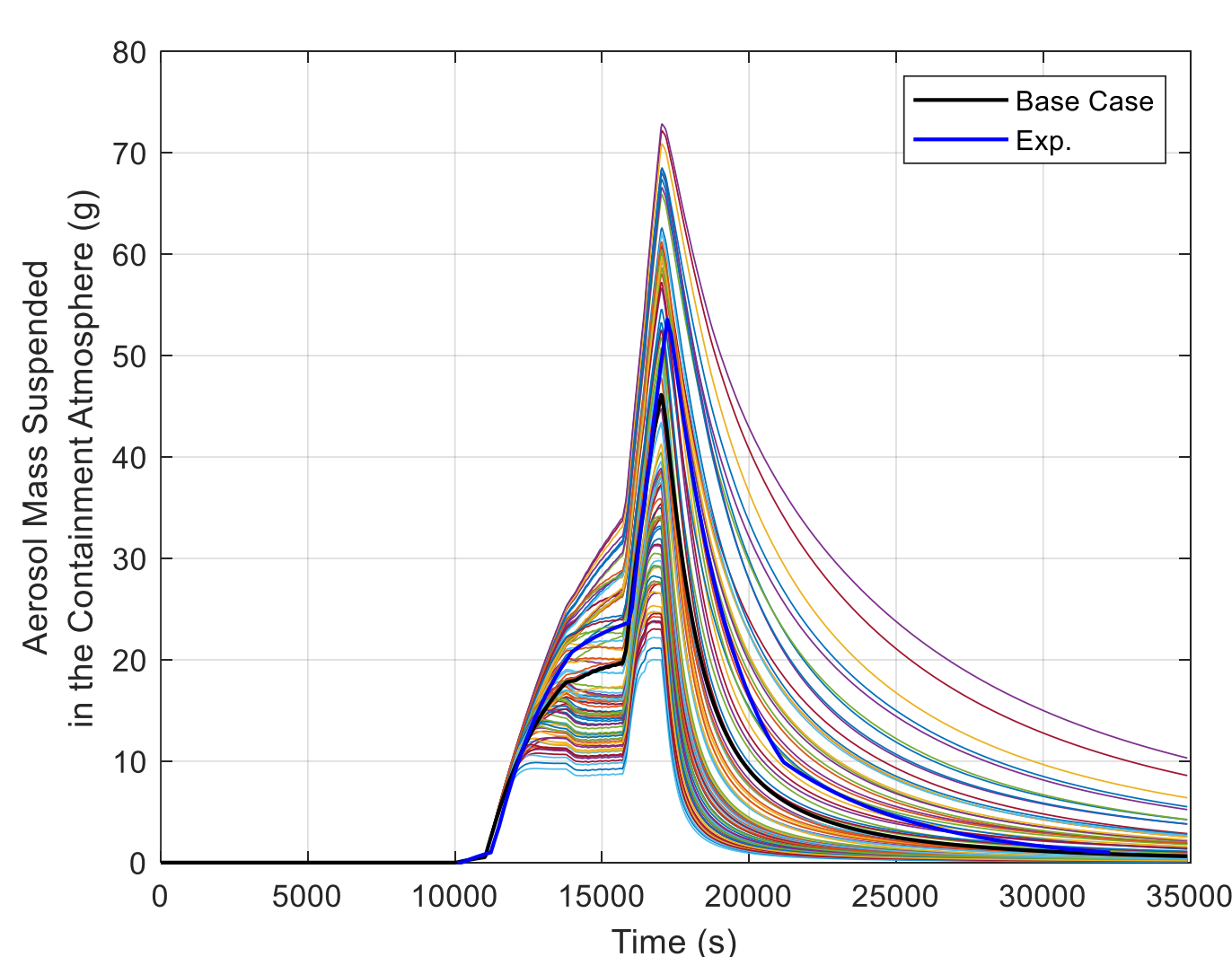


RESULTS

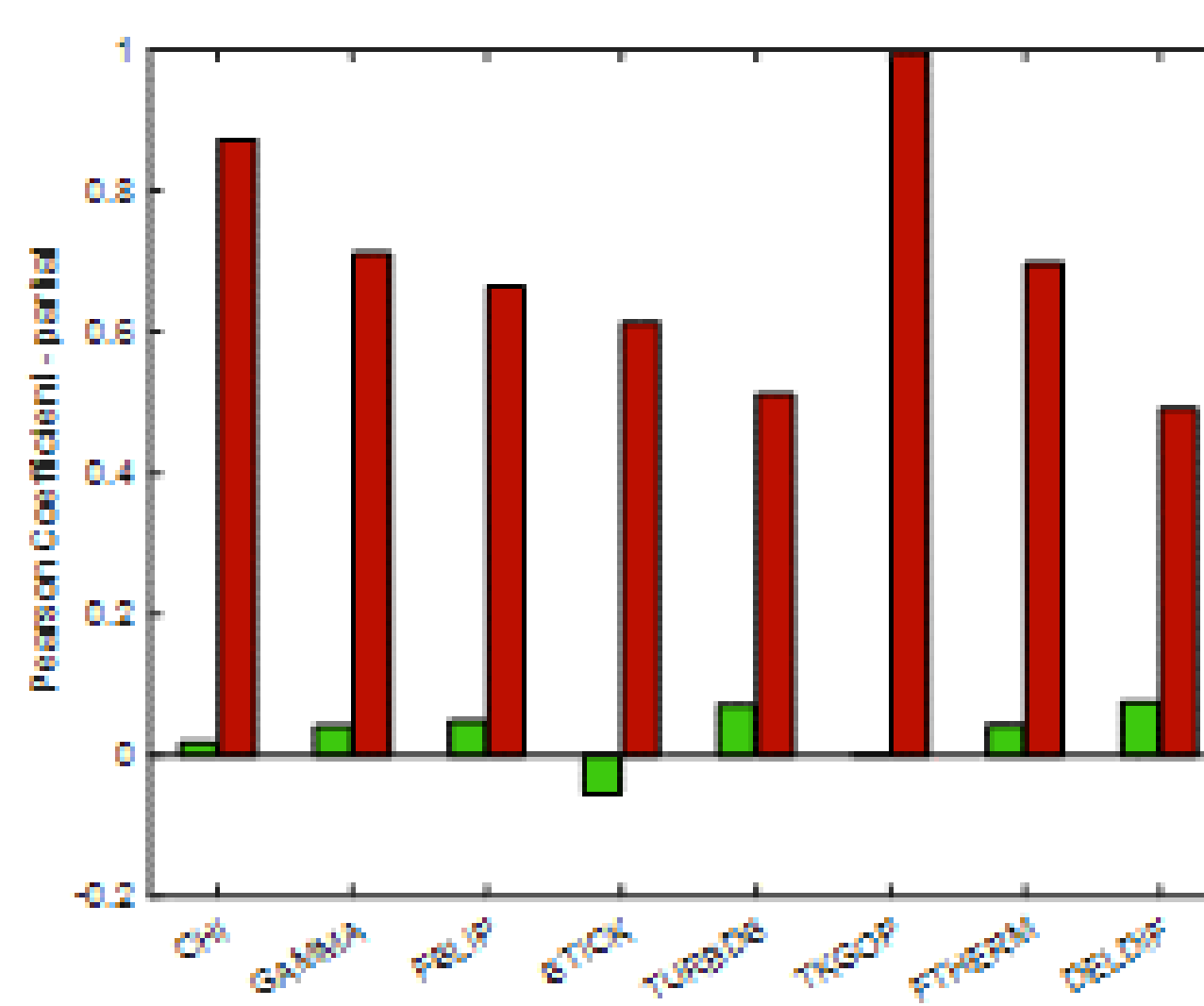
FOM: mass of aerosol suspended in the containment atmosphere

Input Parameters: aerosol behavior and characterization (8)

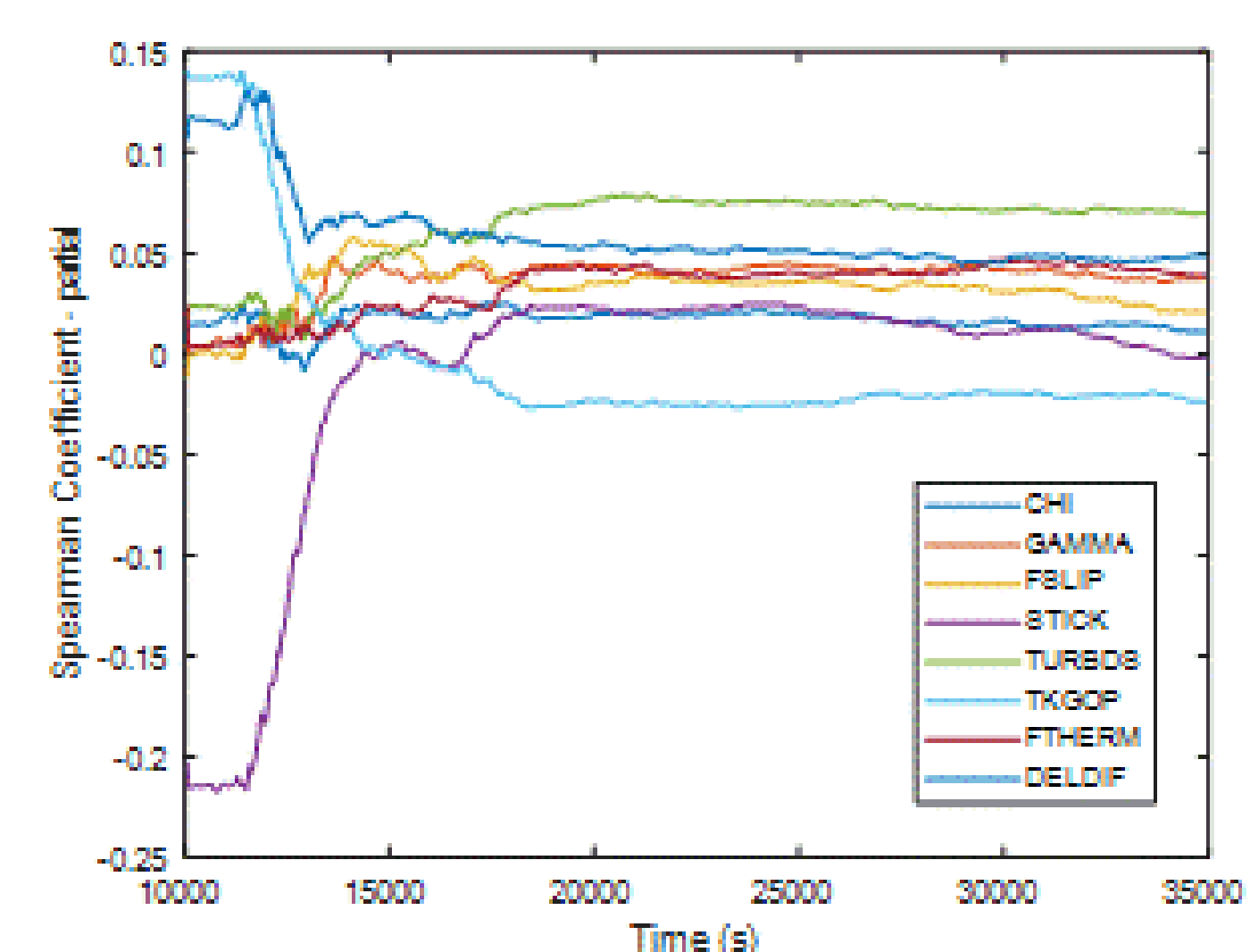
No. of runs: 93 (95%/95% probability and confidence levels)



➤➤➤ The uncertainty band varies in time along with the scenario unfolding, with a broadening in correspondence of the peak value.



➤➤➤ No parameter seems to be predominant in the attempt to explain the uncertainty on the max value of the FOM.



➤➤➤ A weak monotonic relationship seems to exist between the STICK parameter and the FOM at the start of the transient.

CONCLUSIONS

➤➤➤ The calculated uncertainty is a reflection of the complexity of the phenomena occurring in the containment.

➤➤➤ A larger set of input parameters has to be investigated to have a more thorough uncertainty assessment. A better suite of techniques for sensitivity analysis needs to be tested as well.



This project has received funding from the Euratom research and training programme 2014-2018 under grant agreement No. 847441.

MUSA