

ANSWERS TO REVIEWER'S QUESTIONS ON LUC FAVRE'S PHD THESIS

This document briefly sums up the conversion to `.json` format of the experimental data of the DEBORA experiment. It also presents the post-processing programs written in `python 3` to generate figures from NEPTUNE_CFD simulations.

1 Questions from Dirk Lucas

- Misunderstanding regarding the HFP validation vs. the statement that it has been implemented in NCFD:
- Use of "we" in the text
- References numbering
- Use of Kelvin instead of Celsius
- Lack of comparison with NEPTUNE_CFD

2 Questions from Emilio Baglietto

- Scalability of R12 \rightarrow PWR regarding CHF/ DNB ? Any new insight on this ? Regarding the ebullition cycle ?
- Potential error on DEBORA $\phi_w \rightarrow$ discussions with experimental team ?
- Discontinuities in NCFD results presented ?
- Li et al. test providing lower T_w than Hibiki & Ishii while theoretically having less sites ?
- No inclusion of the microlayer in the growth term ? Subsequent validation of HFP at low pressure ?
- Matching bubble growth at low pressure without ML term ? Surprising / Unexpected ?
- New growth law of interest for low pressure boiling ?
- Richenderfer & Kossolapov : developing TBL experiments \rightarrow not really treatable with fully developed flow correlations
- Discussion regarding Li et al. vs. Hibiki & Ishii NSD \rightarrow fundamentally different (potential cavities vs. actually active sites) ? Discussion on nucleation site interactions
- Lift-off diameter in boiling term \rightarrow discussion vs. inception diameter because extra growth comes from liquid evaporating ? Double counting of the heat to the fluid + to heat change ? Only microlayer for growth after inception ?
- Nearly no comparison on DEBORA case for HFP validation ? Only one case ?
- Wall-adjacent cell values instead of bulk values ?
- Quantity of boiling in hot channels in french PWR ?
- Grid / assembly type for 8 grids / 50 cm ?
- Pre-CHF conditions for Bloch image ?
- More details on IAC Ruyer & Seiler ?
- Condensation of Ranz & Marshall : droplets evaporation
- Influence of Added Mass in interfacial forces ? Test of NCFD computation without ?
- Discussion on Tomiyama lift ? Laminar only ?

- Lubchenko MIT PhD → 2 phase wall function, analytical → check conclusions ?
- Moving measurements section → similar but not equivalent in 2 phase flow ?
- Kurul & Podowski originally pool boiling ?
- Use Gilman Mind-Map of HFP for representation of her work
- Large single-phase convection term → robustness of model (finding by Gilman & Komma) ?
- Developing new model before testing any ?
- Adaptive δ in new growth model ? Fitted or computed ?
- Disagreement with Richenderfer N_{sit} measurements → explained by non-prototypical surface → lower number of sites
- Li et al only for water ??
- Li et al only counts nucleating sites ?
- Contact angle in Kommajosyula ?
- Single-phase region in HFP test of DEBORA ? Bulk properties of water ?