Paper ID: TCAD-2020-0486
Title: HotCluster: A thermal-aware defect recovery method for Through-Silicon-Vias Towards Reliable 3-D ICs systems
Authors: Khanh N. Dang, Akram Ben Ahmed, Abderazek Ben Abdallah, and Xuan-Tu Tran

January 30, 2021

Dear Editors

Thank you for allowing us to revise our manuscript, with an opportunity to address the reviewers' comments.

Please find attached our revised manuscript titled "HotCluster: A thermal-aware defect recovery method for Through-Silicon-Vias Towards Reliable 3-D ICs systems", which we previously submitted for publication as an original research article in IEEE Transactions on Computer-Aided Design of Integrated Circuits and Systems. The paper ID is TCAD-2020-0486.

We are uploading (a) our point-by-point response to the comments (below) (response to reviewers), (b) an updated manuscript with yellow highlighting indicating changes, and (c) a clean updated manuscript without highlights.

This work has not been submitted elsewhere.

This work is based on our preliminary work in [21] with the additional new contributions as follows:

- Similar: The architecture of TSV group as it is clustered into 4 subset around the router. The mapping approach is center priority (we called it CPWI).
- New: Architecture with redundant clusters of TSV. Work in [21] has no redundancy.
- New: A new online algorithm for mapping named SAWI which is based on number of spare for each router.
- New: A new offline algorithm for mapping based on max-flow min-cut theorem and solved with Ford-Fulkerson method.
- New: A thermal model for predicting fault rates that are accelerated by the operating temperature. The model is based on Arrherius's Law.
- New: A new algorithm for inserting redundant clusters and correcting instead of uniformly insertion like using SAWI, CPWI or Ford-Fulkerson approach.

We believe the difference between this work the our preliminary work in [21] are substantial enough for publication. The evaluation results also show this work outperforms the previous work in [21].

The overlapping part with [21] is the section III.A where we present the preliminary work. Other parts are new. As we listed above, the new contribution is up to 5/6 ideas (83%); therefore, we strongly believe the new paper is good new for publication and is not a self-plagiarism of [21]. If you still hesitate about the overlapping, we attached in the submission the paper [21] for your information.

Reference: [21] Khanh N. Dang, Akram Ben Ahmed, Yuichi Okuyama, and Abderazek Ben Abdallah, "Scalable design methodology and online algorithm for TSV-cluster defects recovery in highly reliable 3D-NoC systems," IEEE Transactions on Emerging Topics in Computing, vol. 8, no. 3, pp. 577–590, 2020.

The corresponding author is Khanh N. Dang (khanh.n.dang@vnu.edu.vn).

Thank you for considering our manuscript.

Respectfully yours,

Khanh N. Dang

SISLAB, VNU-UET, Vietnam National University Hanoi, Vietnam
Tel: +84-904-899-490
E-mail: khanh.n.dang@vnu.edu.vn

On behalf of all authors.