IEEE TCAD BBI ARTICLE

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***Abstract*—This is the abstract.**

***Index Terms*—Article submission, IEEE, IEEEtran, journal, LaTeX, paper, template, typesetting.**

I. Introduction

SEVERAL researches have studied Body Biasing Injection (BBI) in the past few years. While this injection method had been paused/forgotten for a few years, it has recently regained some interest. Among the latest studies, a modeling and simulation flow has been proposed, alongside better platforms allowing to achieve greater reproducibility and a deeper analysis of the mechanisms at works in digital integrated circuits subjected to BBI. In addition to that

II. Body biasing injection platforms modeling

THIS section approaches the electrical modeling of BBI platforms and integrated circuits. As it has been proposed in Cosade2022Chancel, FDTC2022&2023Chancel, it is possible to model BBI ICs using transistor-less models. It has the advantage of providing a somewhat precise evaluation of the mechanisms at work, while allowing for large simulations in reasonable times. Within this context, we decided

III. Logic path under BBI

For the purpose of analyzing the effects og BBI on actual logic, this section is dedicated in modeling and simulating an actual logic path In this section, we are lingering on analyzing the effects of BBI on more complex logic paths. The study is conducted for both a static logic path and a dynamic logic path. The considered logic paths are constituted of inverters, buffers and a D-Flip-Flop (DFF). The inverters model an arbitrary combinatorial logic path tackling the input of a DFF, used to sample the logic path output. The DFF clock is buffered to achieve an isolation from the ideal voltage source. Then, the DFF output is injected into a final 4-IVX chain, loaded with a 5 pF capacitor. The resulting schematic is described in Fig. III.

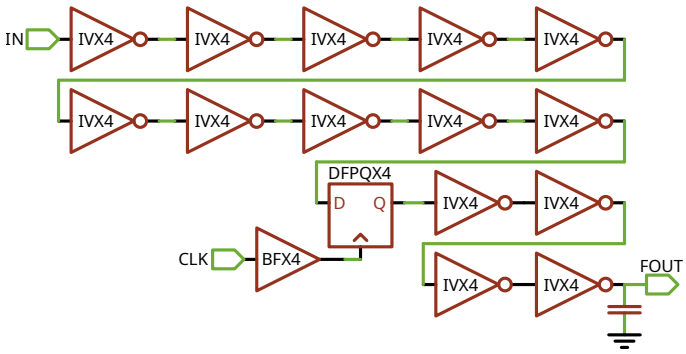

Fig. 1. DFFCHAIN

IV. Body biasing injection platforms overhaul

THIS second section is dedicated in analyzing the various improvements we set up to enhance BBI reproducibility. In the first place, we are going to analyze the various platforms proposed in the state-of-the art, then confront them to the proposed platform.

V. Conclusion