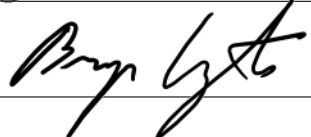


The thesis of Rahul Kumar, titled A Composable Mixed-Signal Generator Framework with Applications to an SRAM Compiler, is approved:

Chair		Date	<u>5/11/2023</u>
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Abstract

A Composable Mixed-Signal Generator Framework with Applications to an SRAM Compiler

by

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Generators are a key component in enabling analog/mixed-signal design automation, reuse, and optimization. Existing generator frameworks suffer from being tightly integrated with commercial tools, having performance limitations, and being difficult to customize to circuits that require different styles of layout. In this thesis, we present Substrate, a new framework for writing analog and mixed-signal generators. Substrate offers high performance, strongly-typed APIs, and a wide set of utilities for schematic entry, layout entry, and functional verification. To provide more compact SRAMs that are easy to integrate into digital flows, we also develop SRAM22, an open-source SRAM generator for the Skywater 130nm open-source process. We describe how SRAM22 utilizes Substrate features to generate compact layout, while retaining the flexibility expected from a generator. SRAM22-generated SRAMs have been integrated into RISC-V cores produced using both open-source and commercial digital tools.