Who I Am & What I'm Working On

Ciro Fabian Bermudez Marquez

cirofabian.bermudezmarquez@studenti.unipd.it

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General Information

- **Name:** Ciro Fabian Bermudez Marquez

- **Nationality:** Mexican

- **Cycle:** 39th Series

- **Curriculum:** Electronics

- **Tutor:** Flavio Loddo

- **Research Center:** INFN sezione di Bari

- **Background:**

  - Bachelor's degree in electronics.

  - Master's degree in electronic instrumentation.

- **Experience:** FPGAs, Verilog, VHDL, C/C++, Python, Linux, DSP.

Research topic and objectives

The research focuses on the development of a UVM verification framework to prove the correctness of pixel chip design to be used in future projects in the field of High Energy Physics (HEP).

Moreover, the modelling of pixel-based detectors, from front-end to back-end, at a high level of abstraction to perform architectural studies will be implemented. This will provide metrics to compare different solutions to satisfy functional and non-functional requirements, both at detector and readout chip level.

IGNITE64 ASIC

- **The IGNITE project aims at developing read-out and processing solutions for high intensity 4D-tracking**

  - Concurrent high time less than 50 ps and space resolution of 10 μm

  - Power density as low as possible around 1 W cm^{-2}

  - Operate at large fluences (> 1x 10^{16} 1 MeV neutron per cm^2)

  - High total ionizing dose (TID > 1 Grad)

  - 28 nm CMOS technology
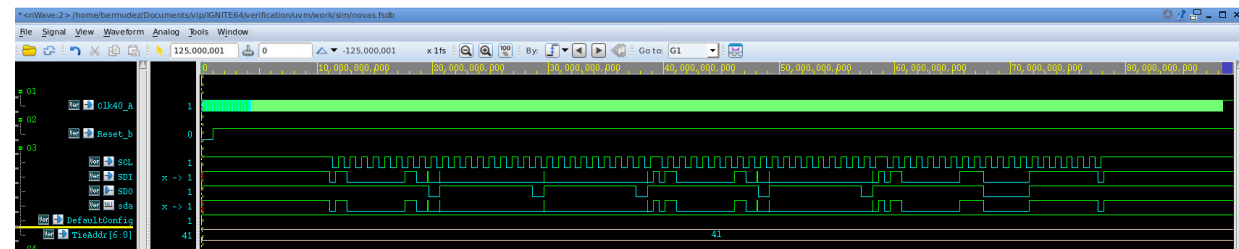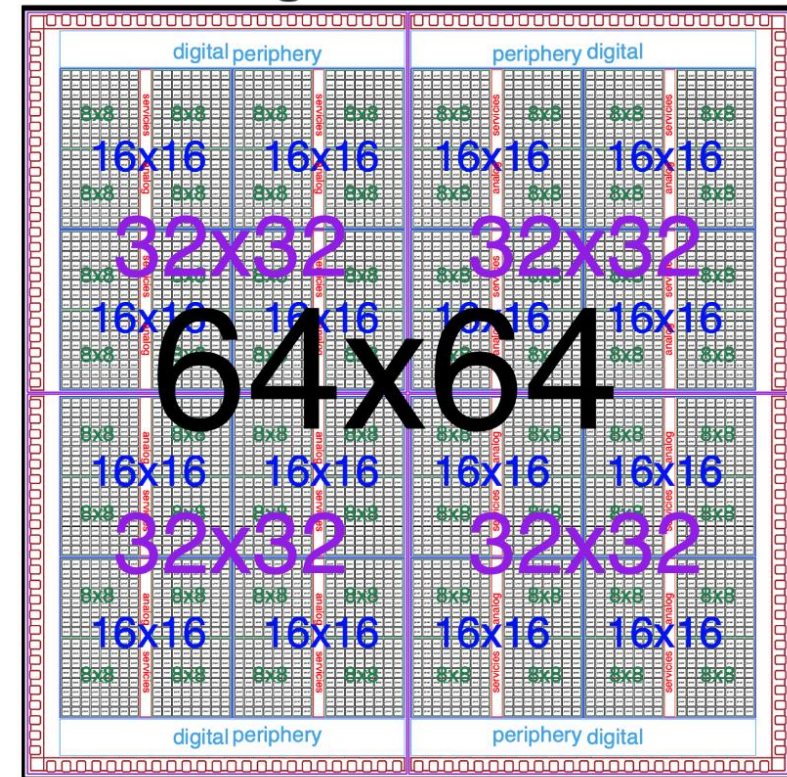
VIPs / UVCs

- **Development of Verification Utility Tools and Scripts to facilitate workflow.**
  - UVC Code Generator
  - Linting and Formatting utility scripts
  - RAL code generator

- **General purpose UVM Verification IPs (VIP) to be use in different projects**
  - GPIO UVC
  - Clock Generator UVC
  - I2C UVC

Interests and hobbies

- **I love playing the guitar, and I really enjoy playing chess, FPGA emulation, programming.**

cirobermudezmarquez