



Naučnoistraživački seminar 1.1.

Akademski savjetnik:

Prof. dr. Tarik Uzunović

Student:

Adis Panjević, magistar elektrotehnike - diplomirani inženjer elektrotehnike

**"Modeling, Design and Characterization of a PAM-3 Wireline Transceiver"**

**SAŽETAK**

Universal Serial Bus 4 version 2.0 (USB4 v2) is the first USB standard to use Pulse Amplitude Modulation (PAM) signaling. The Universal Standard Bus Implementers Forum (USB-IF) has agreed on Three-Level PAM (PAM-3) for the next generation of USB. The USB4 v2 protocol aims to reuse the existing cables and connectors of USB Type-C, which is not possible with the ordinary Non-Return to Zero (NRZ) signaling due to high channel losses. Thus, adopting new signaling techniques is necessary. This paper provides a comprehensive literature review of High-Speed Serial Interface (HSSI) topics, with special emphasis on PAM-3 signaling and USB4 v2 protocol. The objective is to analyze the current state-of-the-art in analog/mixed signal design, HSSI, and PAM-3 signaling, highlighting the existing research gap. While several papers on PAM-3 are available, they mainly focus on memory interfaces and optical applications. There are no papers specifically addressing PAM-3 in the context of USB4 v2, which presents a significant opportunity for my PhD thesis to make a notable contribution.

