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### **P2.48: Characterization of interpad "no-gain" region in the novel, trenched LGADs, from the TI-LGAD RD50 batch production using a fs-laser based TCT-SPA and TPA -TCT at the ELI Beamlines, ELI ERIC**

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In this report we present the results from the two extensive campaigns at the ELI Beamlines, ELI ERIC, on the TI-LGAD prototypes from the TI-LGAD RD50 run production. The focus has been given to the study of the inter-pad region and to the inter-pad distance (IPD) measurements. The TI-LGAD prototypes with the one trench are compared to those with the two trenches. Also, untypical UFSD Type 10 Prototype, with 2p-stops and guard bias ring in between p-stops (produced as a reference prototype in the same batch and from the same wafer as trenched LGADs), is compared to the trenched LGADs with two trenches. The two experimental techniques, the fs-laser based TCT-SPA and the TPA-TCT are compared. In particular, the potential of fs-laser based SPA in resolving the structures of the inter-pad region will be emphasized. We will also discuss the the inter-pad region response to very high intensity injections.

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