[BoldFont = LinLibertine$_R B.otf, ItalicFont = LinLibertine_R I.otf, BoldItalicFont = LinLibertine_R BI.otf, Path = /opt/indico/.venv/lib/python2.7/site-packages/indico_fonts/][BoldFont = LinBiolinum_R B.otf, ItalicFont = LinBiolinum_R I.otf, Path = /opt/indico/.venv/lib/python2.7/site-packages/indico_fonts/]

HTPD 2018

Contribution ID : **141** Type : **not specified**

5.4 Sub-nanosecond Single Line-of-Sight (SLOS) X-ray Imagers

Tuesday, 17 April 2018 10:00 (30)

A new generation fast-gated x-ray framing cameras has been developed that is capable of capturing multiple frames along a single line-of-sight with 25 ps temporal resolution and 40 µm spatial resolution. This was achieved by integrating an electron pulse-dilation imager [1] with Sandia's nanosecond-gated burst mode CMOS sensors [2]. The combination of these two transformative technologies enables a new class of x-ray imagers that will have significant impact in HED diagnostic applications requiring high temporal and spatial resolution. The first of these instruments, SLOS-TRXI and SLOS-CBI, have been deployed at the Omega and NIF HED facilities and began on-line commissioning in the Fall of 2016. Here we present the system architecture, as well as system characterization and performance. We will discuss in detail the testing performed to tune the photocathode voltage waveform, which achieves a uniform temporal magnification profile, as well as the implications for the systems' dynamic range and sensitivity. Finally, we will present design improvements for future instruments aimed at mitigating space-charge broadening to improve the dynamic range and compensating for the electron energy chirp to provide uniform temporal sensitivity.

Primary author(s) : ENGELHORN , Kyle (General Atomics)

Co-author(s) : HILSABECK , Terance (General Atomics)

Presenter(s) : ENGELHORN , Kyle (General Atomics); HILSABECK , Terance (General Atomics)

Session Classification : Session #5, Tuesday Morning Invited Talks, Chair T. Hilsabeck