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First two-bunch measurements using the electro-optical near-field monitor at KARA

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The Karlsruhe Research Accelerator (KARA) is an electron storage ring, which features an electro-optical near-field monitor within the beam pipe in vacuum as a tool for longitudinal bunch profile measurements. The device performs very well in single-shot turn-by-turn measurements during single-bunch operation and over the years. The design has been optimized to be prepared for measurements in multi-bunch operation. The ability to work with multiple bunches and short bunch spacing is an important step to make the device suitable for more application purposes such as a diagnostics tool for the Future Circular Collider for electrons and positrons (FCC-ee). This contribution provides first tests of the monitor during two-bunch operation with minimum 2 ns bunch spacing. Challenges like crystal heating due to an increased beam current are discussed and strategies for mitigation are presented.

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Footnotes

I have read and accept the Privacy Policy Statement

Yes

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