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Present Research and Development Activities at KARA

Since 2016, the Karlsruhe Research Accelerator (KARA), which is a 2.5 GeV electron storage ring, has been operated as a synchrotron radiation light source and test facility for accelerator physics experiments. According to our long-term strategy using KARA as an accelerator test facility, not only continuous infrastructure refurbishment, but also accelerator research and technology development for future accelerators have been performed, thereby improving the capabilities of the KIT accelerator system. At KARA, we have continuously worked on the development of new accelerator operations, which are within the scope of future accelerators and storage rings. An experiment has taken place with a beam of negative momentum compaction factor, which can lead to ultra-low emittance beams. In parallel, a beam manipulation by an RF modulation method has also been investigated in-depth. In the presentation, recent highlights from our results at KARA are discussed.

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