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Design considerations of the corrugated structures in a vacuum chamber for impedance studies at KARA

Two parallel, corrugated plates will be installed at the KIT storage ring KARA (KARlsruhe Research Accelerator). This impedance manipulation structure can be used to study and eventually control the electron beam dynamics and the emitted coherent synchrotron radiation (CSR) at KARA.

In this contribution, we present the design of the impedance manipulation structure with corrugated plates, simulation results showing the influence of different corrugation parameters on its impedance, and the impact of this additional impedance source on the temporal changes in the emitted CSR in the presence of the microbunching instability.

Primary authors: MOCHIHSHI, Akira (Karlsruhe Institute of Technology); Mr MAIER, Sebastian (KIT); MUELLER, Anke-Susanne (KIT); Dr CHA, Hyuk Jin (Karlsruher Institut für Technologie (KIT)); SCHWARZ, Markus (KIT); NASSE, Michael (Karlsruhe Institute of Technology); BROSI, Miriam (KIT)

Presenter: Mr MAIER, Sebastian (KIT)

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