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Conceptual design of the vacuum system of cSTART

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The Karlsruhe Institute of Technology (KIT) operates research accelerator facilities for the development of new technologies for future compact light sources at the Institute for Beam Physics and Technology (IPBT). Within the cSTART project (**c**ompact **ST**orage ring for **A**ccelerator **R**esearch and **T**echnology), a Very Large Acceptance compact Storage Ring will be realized to combine a compact storage ring and a laser-plasma accelerator. The new design, based on 45° bending magnets, is suitable to store a wide momentum spread beam. Good vacuum conditions are essential for the successful operation of such an accelerator system. In our case, a final pressure of <1E-8 mbar is required. For cSTART, special care was taken to find a compact (43 m circumference), space- and cost-saving, yet efficient vacuum system design that fulfils this requirement. This article presents the vacuum concept that will be used at cSTART. This includes the selection of vacuum components, the design of the vacuum chamber and vacuum simulations.

Footnotes

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