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## Design and experimental research of UHV flanges for the Hefei Advanced Light Facility

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The Hefei Advanced Light Facility (HALF) is a diffraction-limited storage ring (DLSR) light source based on the compact multi-bend achromat (MBA) lattice. Therefore, the gaps between those focusing magnets are small. The commonly used ConFlat® flange, with a large axis dimension, is not suitable for the compact lattice in HALF. In this work, a stainless steel tapered flange fastened by a chain clamp has been designed for its smaller axis dimension. Two types of sealing structures are used, which are knife-edge and spring-energized metal C-ring structures, respectively. The copper gaskets with and without silver coating are used for knife-edge flange, respectively. Besides, the spring-energized metal C-ring is manufactured by SUS 304 with a tin layer of 50  $\mu\text{m}$ . These flanges and chain clamps were made of SUS 304, and their vacuum properties were tested. The results indicate that these UHV flanges can meet the demands for the vacuum system of HALF.

### Funding Agency

### Footnotes

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Yes

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