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## **Removal of BCP defects for the 166.6 MHz HOM-damped quarter-wave srf cavities**

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The compact 166 MHz HOM-damped quarter-wave superconducting cavities for HEPS have complex geometries, resulting in streak defects on the inner surface of the cavity after BCP etching. Surface areas with low flow velocity from fluid dynamics simulations coincide with defects observed on the cavity inner surface. Based on the 166 MHz cavity structure, an improved BCP setup with holes and discs was designed. The flow velocity at the defect locations was greatly increased, and defects did not reappear. An excellent cryogenic performance has been achieved in the subsequent vertical tests, indicating that the post processing of the cavity was successful. This paper presents the analysis, solution, and final results of BCP etching defects in the chemical processing of the 166.6 MHz srf cavity.

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### **Footnotes**

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