IPAC'23 - 14th International Particle Accelerator Conference



Contribution ID: 2667 Contribution code: WEPA167

Type: Poster Presentation

## RF superconducting cavity and zero-temperature physical phenomena

Wednesday, 10 May 2023 16:30 (2 hours)

What happens when the temperature reaches absolute zero? Physical phenomena at the zero-temperature limit are studied in accelerator physics. The background temperature of the universe goes down as long as expansion goes on. The BCS resistance of a superconducting cavity is shown as a function of temperature at different frequencies. The surface resistance of the Nb superconducting cavity is reduced to residual resistance and flux-trapped resistance at 0 K. Blackbody radiation is stopped by heat radiation at 0 K. Thermal expansion and thermal diffu-sion become zero at 0 K. Black holes evaporate at 0 K.

**Funding Agency** 

Footnotes

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Yes

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**Track Classification:** MC7: Accelerator Technology and Sustainability: MC7.T07: Superconducting RF