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Capture cavities for the CW polarized positron source Ce+BAF

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The initial design of the capture cavities for a continuous wave (CW) polarized positron beam for the Continuous Electron Beam Accelerator Facility (CEBAF) upgrade at Jefferson Lab is presented. A chain of standing wave multi-cell copper cavities inside a solenoid tunnel are selected to bunch/capture positrons in CW mode. The capture efficiency is studied with varying cavity gradients and phases. The heating load from the incoming particle radiation shower and RF field will limit the achievable gradients, especially the first cavity. The cooling method and results are shown. The beam loading cancellation from positrons and electrons are investigated.

Footnotes

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Primary author: WANG, Shaoheng (Thomas Jefferson National Accelerator Facility)

Co-authors: USHAKOV, Andriy (Thomas Jefferson National Accelerator Facility); Dr GRAMES, Joseph (Thomas Jefferson National Accelerator Facility); RAUT, Nabin (Thomas Jefferson National Accelerator Facility); RIMMER, Robert (Thomas Jefferson National Accelerator Facility); ROBLIN, Yves (Thomas Jefferson National Accelerator Facility)

Presenter: WANG, Shaoheng (Thomas Jefferson National Accelerator Facility)

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