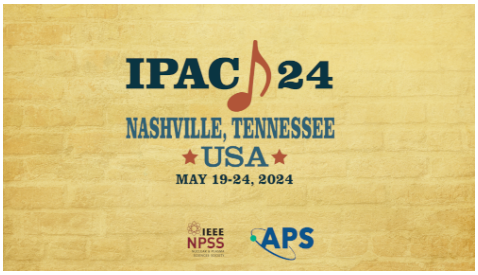

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Enhanced position resolution of L-band cavity BPM via matching its resonance frequencies

Sunday, 19 May 2024 16:00 (2 hours)

Three L-Band cavity BPMs were tested at the Accelerator Test Facility (ATF) for raising beam position resolution. In the previous study, we found each BPM has a different resonant frequency due to manufacturing tolerance. From the earlier experiment, the position resolution was around 324 nm, while data incoherence problems occurred. Recently, we developed a Local oscillator (LO) to compensate for different BPM resonance frequencies during the L-Band BPM test at ATF2. The LO generates three channels corresponding to each BPM to yield intermediate frequencies, 80 MHz in the L-Band down-convertor. We achieved around 200 nm position resolution by using the developed LO. In this paper, we will explain the differences between the former beam test and the present beam test, its configuration, and the experiment method.

Footnotes

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