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Development of a DAQ system for a High Resolution cavity BPM for the future linear collider

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A cavity beam position monitor (cBPM) developed by CEA Saclay was installed at the end of the Accelerator Test Facility (ATF) linac to evaluate the combined performance of the monitor and its associated signal processing system. The setup incorporates a down-conversion architecture inspired by Royal Holloway, University of London (RHUL), and employs a digital down-conversion (DDC) algorithm to extract beam position. This configuration enables highsensitivity measurements of the transverse beam position. Preliminary results confirm successful signal acquisition and a clear position-dependent response, validating the integrated performance of the cBPM, analogue electronics, and digital processing chain. The results underscore the necessity of reliable local oscillator (LO) phase-locking to ensure precise position determination.

Footnotes

Paper preparation format

LaTeX

Region represented

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Author: PEDRAZA, Laura (Instituto de Física Corpuscular)

Co-authors: MENÉNDEZ-MÁRQUEZ, Abraham (Instituto de Física Corpuscular); GIMENO-MARTINEZ, Benito (Val Space Consortium); BLANCH GUTIERREZ, Cesar (European Organization for Nuclear Research); ESPERANTE, Daniel (Instituto de Física Corpuscular); GONZALEZ-IGLESIAS, Daniel (Instituto de Física Corpuscular); OLIVARES HERRADOR, Javier (European Organization for Nuclear Research); FERNÁNDEZ-ORTEGA, Juan

Carlos (Instituto de Física Corpuscular); BORONAT, Março (European Organization for Nuclear Research); FUSTER--MARTINEZ, Nuria (Instituto de Física Corpuscular)

Presenter: PEDRAZA, Laura (Instituto de Física Corpuscular)

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