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High-speed RF Switch Electronics for picking up of Electron-Positron Beam Bunches

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In modern electron positron colliders, both the electron and the positron runs in the tunnel, such as Circular Electron Positron Collider (CEPC) to be built and Beijing Electron Positron Collider (BEPCII). To guarantee good quality of the beam, beam diagnostics is indispensable. To achieve beam measurement of the electron and positron beams, picking up of these two different bunches in real time is an important task. Since the time interval between the adjacent electron and positron bunch is quite small, for example 6 ns in CEPC, high speed switch electronics is required. The paper presents the prototype design of a high-speed Radio Frequency (RF) electronics which is able to pick up nanosecond positron-electron beam bunches, with a switching time less than 6 ns. We also conducted initial tests in the laboratory to evaluate the performance of the electronics, and the results indicate that this module can successfully achieve bunch signal pick up within 6 ns time interval. The electronics makes it possible to measure electron and position beams respectively, thus improving the beam quality.

Minioral

Yes

Description

RF, beam

Speaker

Liujiang Yan

Institute

USTC

Country

China

Authors: YAN, Liujiang (University of Science and Technology of China); Prof. ZHAO, Lei (University of Science and Technology of China)

Co-authors: LIU, Jinxin (University of Science and Technology of China); DONG, Ruoshi (University of Science and Technology of China); JIANG, Zouyi (University of Science and Technology of China); Prof. LIU, Shubin (University of Science and Technology of China); Prof. AN, Qi (University of Science and Technology of China)

Presenter: YAN, Liujiang (University of Science and Technology of China)

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