



Contribution ID: 138

Type: **Poster Presentation**

## Design and experiment of an optimized eight-stripline beam energy and energy spread monitor

*Thursday, 12 September 2024 16:00 (1h 30m)*

In order to achieve nondestructive measurement and feedback of beam energy and energy spread for high repetition frequency Linac, an eight-stripline beam energy and energy spread monitor have been designed to replace destructive monitor such as fluorescent screen. Different from the conventional evenly arranged stripline structure, an unevenly arranged stripline layout is proposed to improve the sensitivity. At the same time, impedance transition structures are added to the Feedthroughs and striplines connection parts to further enhance the system sensitivity and resolution. The electronics adopts the method of separating the analog front-end and digital acquisition part from each other, and has the function of bunch-by-bunch measurement and data storage with a high repetition frequency of 1 MHz. The processing of the monitor has now been completed. Experiments show that the position sensitivity with an inner diameter of 63 mm reaches  $0.0538 \text{ mm}^{-1}$ , which is close to the theoretical result of numerical calculation. Compared with monitors of traditional structure, the performance has been greatly optimized.

### Footnotes

### Funding Agency

### I have read and accept the Privacy Policy Statement

Yes

**Primary author:** WANG, Qian (University of Science and Technology of China)

**Co-authors:** HUANG, Letian (Dalian Institute of Chemical Physics); ZONG, Liuxu (Dalian Institute of Chemical Physics); DONG, Qingyang (Dalian Institute of Chemical Physics)

**Presenter:** WANG, Qian (University of Science and Technology of China)

**Session Classification:** THP: Thursday Poster Session

**Track Classification:** MC5: Longitudinal Diagnostics and Synchronization