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## Hi'Beam: a pixelated on-line beam monitor for carbon-ion therapy facility

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Considering the increasing number of cancer patients, China has built its carbon ion therapy facility, which has been officially put into clinic treatment in August 2020. The beam monitoring system in the therapy facility ensures the beam energy deposition can accurately cover the dedicated tumor region and the correct dose can be delivered. Hence, a precise and non-invasive real-time beam monitor, named Hi'Beam, has been designed for the carbon-ion therapy facility. The Hi'Beam locates in-between the scanning magnets and the tumor. The main components of Hi'Beam are an oblate gas chamber, 80 Topmetal pixel sensors, the readout electronics, and the data acquisition system. With the small pixels of 83µm x 83µm in the Topmetal sensor, the Hi'Beam is expected to provide a monitoring accuracy of ~10µm to 20µm. This paper will discuss the design and performance of the Hi'Beam system.

## Minioral

Yes

## **IEEE Member**

No

## Are you a student?

No

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