



Contribution ID: 33

Type: **not specified**

## R&D Studies on the S-band Hybrid Bunching-accelerating Structure

*Wednesday 6 June 2018 17:15 (25 minutes)*

Generally, a standard bunching system is composed of a SW pre-buncher, a TW buncher and a standard accelerating structure. In the industrial area, the bunching system is usually simplified by eliminating the PB and integrating the B and the standard structure together to form a  $\beta$ -varied structure. The beam capturing efficiency for this kind of simplified system is often worse than that for the standard one. The HB has been proved to be a successful attempt to reduce the cost but preserve the beam quality as much as possible. Here we propose to exclusively simplify the standard bunching system by integrating the PB, the B and the standard structure together to form a HBaS. Compared to the standard bunching system, the one based on the HBaS is more compact, and the cost is lowered to the largest extent. With almost the same beam transportation efficiency ( $\sim 70\%$ ), the peak-to-peak (p-to-p) beam energy spread and the  $1\sigma$  emittance of the linac with the HBaS are  $\sim 20\%$  and  $\sim 60\%$  bigger than those of the linac based on the split system. Based on the beam dynamics study results, a prototype of the HBaS is being developed at IHEP, here the progress will also be presented.

**Author:** Dr PEI, Shilun (IHEP)

**Presenter:** Dr PEI, Shilun (IHEP)

**Session Classification:** Technology