

Development of wireless data and power transmission for tracking detectors

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A large contribution to the total material budget of trackers come from services for data communication and power. Optimizing the material budget without large scarification of reliability is important when designing trackers.

The WADAPT (Wireless Allowing Data And Power Transmission) project investigates the feasibility for wireless data and power transmission to trackers. The project benefit from the fast growing development of wireless technology for the consumer market. The components becoming available in consumer products uses millimeter waves and capable of Gbps data transfer over short distance at low power hence possibly well suited for use in trackers. The millimeter wave transceivers and antennas are med with technology widely used in trackers. The size of the components in wireless data link is compatible with tracking detectors.

We will present results from feasibility studies of wireless data transfer in tracker environment using commercial components that are not optimized for trackers. Results will be shown on data transfer between and trough tracker layers, Bit Error Rate for a Gbps wireless data link, measurement of crosstalk between closely placed links etc.

The WADAPT project is now developing a wireless data link optimized for trackers that can be easily integrated with components currently developed for HL-LHC. We will present the plan and status of this development.

Primary author: BRENNER, Richard (Uppsala University (SE))

Presenter: BRENNER, Richard (Uppsala University (SE))

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