

EEI-KOLLOQUIUM

Radio over Fiber Systems for Application in Multigigabit/s Wireless Systems

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The demand for higher data rates seems to keep growing in the access network. In the near future the data rates between 1 and 10 Gbit/s per customer are required. For the distribution of the huge amount of information the optical fiber will be the final solution.

Since the end users would like to access to all this broadband services while being mobile. Millimeter wave Radio-over-Fiber systems are the key enabler to realize gigabit speed broadband wireless services.

The requirements for broadband wireless access in terms of channel capacity in free space propagation will be discussed. An overview of the most common millimetre wave generation methods is given. Due to the propagation of the signals in a dispersive medium there are limitations for the phase stability of the millimetre wave signal and the timing jitter for the multigigabit/s baseband signal. Several optical methods for signal processing, i.e. fiber loop, sideband filtering are discussed to overcome these limitations. System experiments with data rates of up to 10 Gbit/s are presented.