Outdoor Mm-Wave Channel Measurements

**Introduction**

- Millimeter-wave bands: candidates for future mobile radio networks
- Challenging propagation conditions
  - High pathloss
  - Oxygen attenuation (60 GHz)
  - Less penetration of buildings, etc.
- No comprehensive channel model yet

**Measurement Scenario**

- Street canyon urban access scenario considering lamp post small cell deployment
- Potsdamer Straße, Berlin, Germany: modern office buildings, 51.5 m street width
- Focus: investigation of path loss and time variance
- 800 µs temporal snapshot separation (0.4 mm spacing)
- > 5 million channel snapshots taken
- Distances up to 50 m

**Channel Sounder**

- Wideband time-domain channel sounding with multitone sequence
- FPGA-based hardware platform
- 250 MHz bandwidth
- 60 GHz frontends
- Static transmitter
- Mobile receiver
- Omnidirectional antennas

**Results**

- Time-resolved measurement of multipath components
- Significant propagation paths besides LOS
- High time variance and blockage effects
- Path loss model
- Input to channel model (see other poster)