

Measurement Setup:

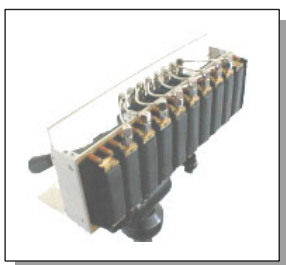
- Propagation situation: mostly non-line-of-sight, Tx antenna moved at 10 km/h, Rx antenna fixed
- Place: hilly residential area at Ilmenau, average height of buildings 6 m
- Carrier frequency: 5.2 GHz, bandwidth: 120 MHz, maximum excess delay 3.2 μ s, transmitter power: 27 dBm



Transmit antenna:

omnidirectional sleeve antenna, vertical polarization

height above ground: ca. 1.8 m



Receive antenna:

8 elements uniform linear patch array (ULA), vertical polarization

element separation: 0.4λ

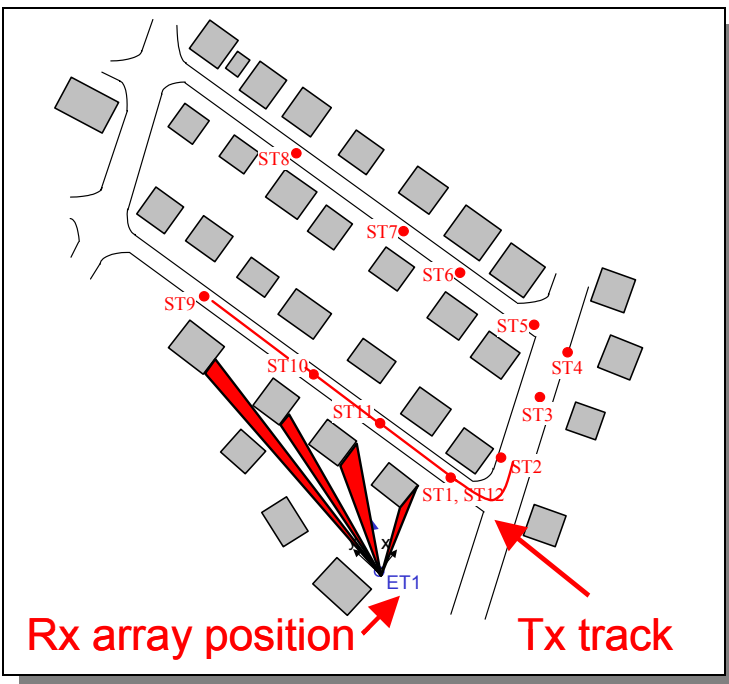
height above ground: ca. 4.5 m

References:

Statistical Analysis of Time-Variant Directional Mobile Radio Channels Based on Wide-Band Measurements

D. Hampicke, A. Richter, A. Schneider, G. Sommerkorn, R.S. Thomä
(Proc. European Wireless '99, Munich, Germany, Oct. 1999)

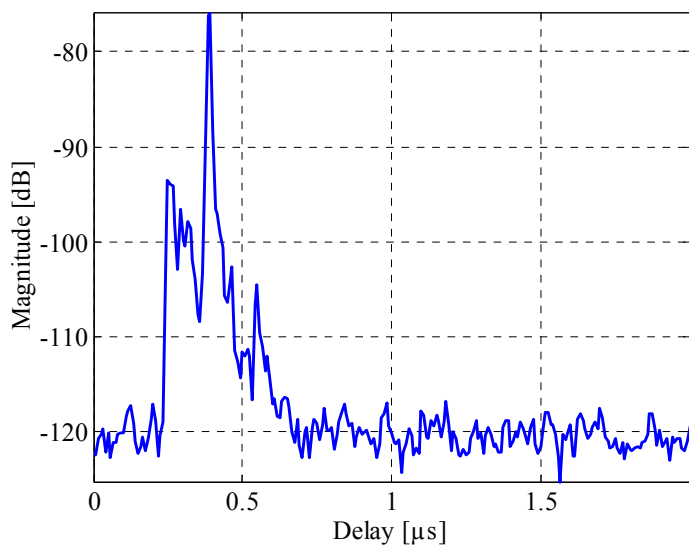
Photograph and sketch of the measurement environment:



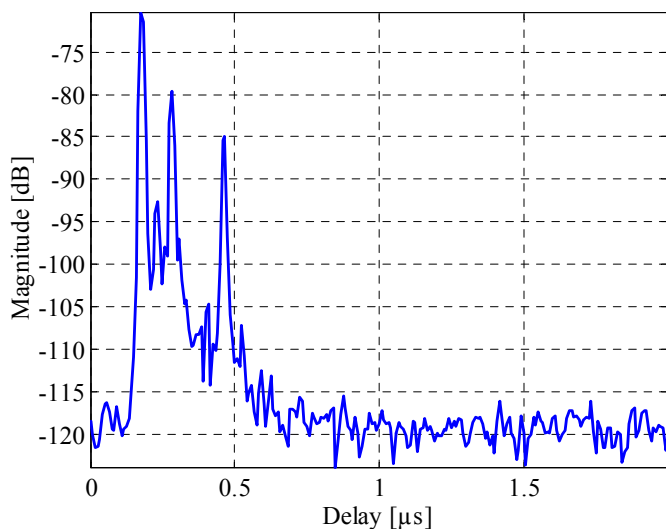
The receive array looks towards the Tx track, but LOS is frequently obstructed. Strong single bounce reflections can be observed via the house fronts as indicated by the red sectors

The sample data include 4 blocks of 20 consecutive snapshots from different parts along the route from ST9 to ST12 (at 4, 8, 12 and 16 seconds in the parameter estimation plots). The snapshot spacing is about 0.4λ .

Selected data view:

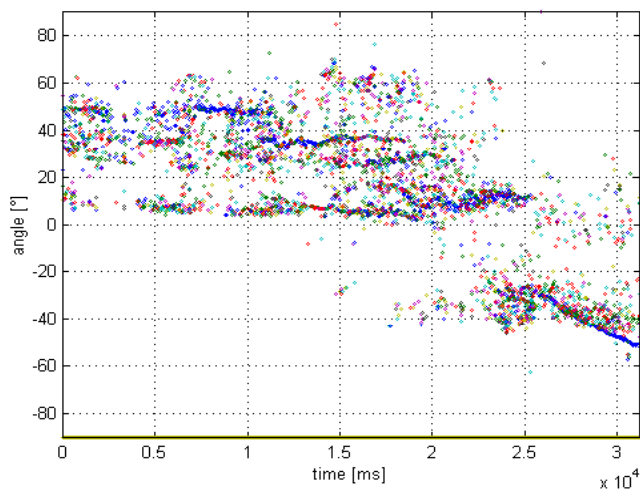


Delay spectrum: single snapshot averaged over all Rx antenna channels (between ST9 and ST10).



Delay spectrum: single snapshot averaged over all Rx antenna channels (between ST10 and ST11).

Advanced parameter estimation results:

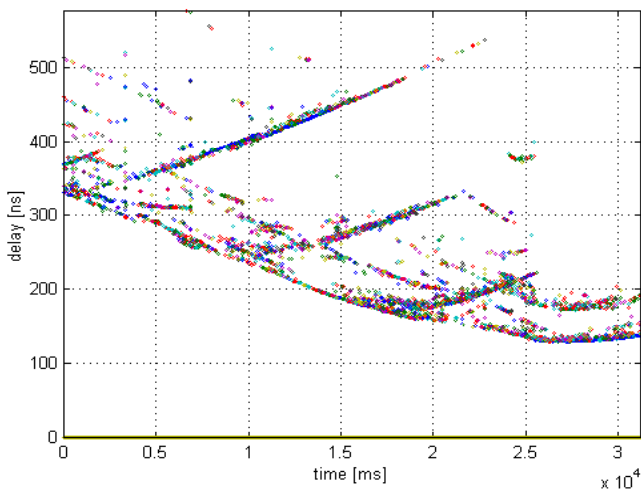


Joint 3dimensional superresolution parameter estimation by Unitary ESPRIT

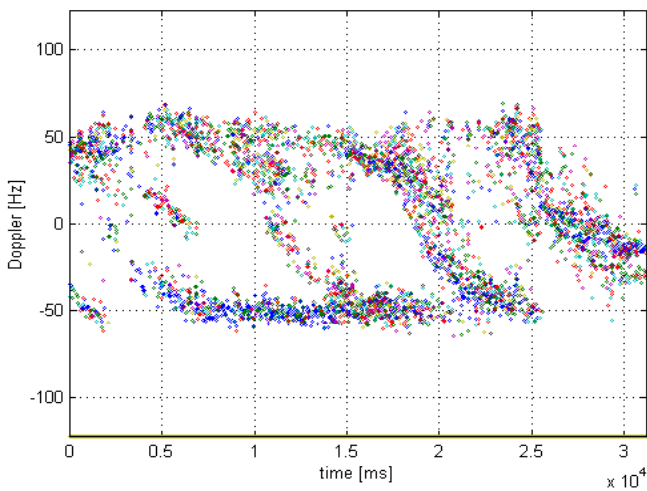
Each estimated multipath component is represented by a dot in the dimensions

Azimuth of arrival (Rx azimuth)

Delay



Doppler Shift



Measurement file remarks:

- Array calibration including coupling compensation for the ULA (five diagonals)
- No phase alignment to compensate the temporal offset between capturing the individual antenna channels (cf. [time diagram](#))
- Filename: <http://www.channelsounder.de/downloads/hholzsim01.zip>