

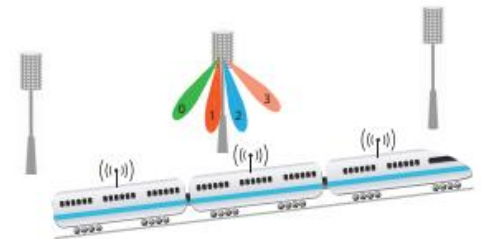
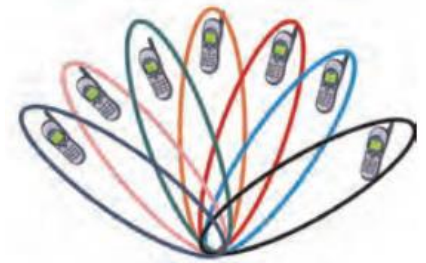
Beam Switching methods for Mobile Communication

With the development of mobile communication generations, higher data throughput is required to support the large traffic demands. As a solution, 3GPP assigns 5G standards close to millimeter-wave frequencies for wider bandwidths. However, wireless communication at a higher frequency leads to a stronger free space path loss, which has to be overcome by beamforming technology.

The beamforming can be realized by an antenna array that concentrates the gain in a certain direction. As a trade-off, this beam becomes narrower with a reduced coverage area. To maintain the coverage ability for mobile communication, beam switching methods are required. For example, fast beam switching from a base station (BS) to different users is inspired by time division multiple access. In another case, if the beamforming paths between the BS and user are intermittently blocked by vehicles, beam switching has to be applied between different paths. Furthermore, if the mobile user travels, beam switching is necessary to offer a high-quality signal propagation during the user's movement.

In this seminar, we will focus on the beam switching methods as follows.

- Get an overview about why, when, and how beam switching methods are applied.
- Pick two or three most attractive beam switching methods and explain them in details.



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