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标题: Diffraction in mm and Sub-mm Wave Indoor Propagation Channels
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摘要: Current indoor wireless communication systems are shifting from classical microwave bands towards mm wave frequencies, whereas here the 60 GHz band is of special interest. Future systems are expected to work at even higher carrier frequencies in the sub-mm band beyond 300 GHz. In indoor wave propagation channels of such systems, diffraction occurs at a multitude of objects and hence must be considered for propagation simulations. Although the relevance of diffraction has been thouroughly studied at lower frequencies, it has not yet been analyzed methodically in the mm and sub-mm wave frequency range. This paper presents an extensive measurement campaign of the diffraction at objects like edges, wedges and cylinders for frequencies of 60 and 300 GHz. Different materials, realistic antennas as well as transmission through the objects are taken into account. Theoretical approaches are validated against the measurement results. Furthermore, shadowing of rays by persons is investigated and modeled with the help of diffraction. Finally, ray tracing is applied in an office scenario in order to evaluate the impact of diffraction on mm and sub-mm wave indoor channel characteristics.
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