Polarimetric Properties of Diffuse Scattering from Building Walls

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Abstract:

Dense multipath components may represent an important part of wireless transmission channels, yet little is known about their physical properties. For this reason, we parameterize an ad-hoc diffuse scattering model, which can be easily included in ray-tracing tools. The work, focusing on the polarimetric properties of diffuse contributions scattered off building walls, relies on experimental data. By means of a joint post-processing of the data in conjunction with ray-tracing simulations, characteristic parameters of diffuse scattering are extracted. The analysis reveals that diffuse scattering represents an crucial part of the received power. Regarding depolarization caused by diffuse scattering, our work highlights that depolarization appears to be small for homogeneous brick walls, but is far from negligible for more complex wall structures.