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Electromagnetic Phenomena behind the Wet Antenna Effect

Wednesday, June 26, 2019 11:30 AM (20 minutes)

This talk will give an introduction to fundamental antenna parameters and characteristics like gain, directivity, efficiency, and reflection coefficient. It will debate the impact of wetness on the antenna cover on these parameters and on the link attenuation as a whole.
The impact of water on electromagnetic wave propagation is explained based on the canonical example of a thin water layer at plane wave incidence. To show this impact for a more realistic example, numerical field simulation and measurement results from a directive horn antenna are discussed. The power dissipation properties of water, which are characterized by the loss tangent, are considered in particular.
That leads to the discussion of the constituent parts of the wet antenna effect due to wetness on the cover of highly directive reflector antennas, as they are used in commercial microwave links (CMLs).
From this a model is derived, to describe the wet antenna effect from a physical point of view.

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