

Any Further Results on Media-based Communications?

- Mathematical framework is further developed and will be soon available for comments. At the same time, a meaningful study requires knowledge of actual channel impulse responses when several options are available, and their statistical behavior in modeling dependencies.
 - Rich scattering model does not apply if there are many options (capacity tends to infinity).
- Analysis for a simplistic channel model (based on independent Rayleigh fading) is straightforward and the core of it is given in the presentation.
 - In $1 \times N$ media-based, due to orthogonality of received dimensions in terms of noise, there is a saving in energy with respect to $N \times N$ MIMO even if selection gain is not included. This is simulated and depending on N , the gain can be significant.
 - Simulations shows that selection provides much higher gains.
 - Selection gain increases with the number of options available for the channel.
 - It is rather easy to perturb the channel, so one can easily generate many options for the channel.
 - Work under progress:
 - A practical and low-cost hardware design for channel perturbation is being developed (not included in this presentation) which will be reported shortly. This will enable a study of actual achievable selection gain as the number of options for the channel increases.
 - Plan to provide a library of actual channel impulse responses as soon as possible.
 - Aim to verify the channel impulse responses with the theoretical model.