Algebraic Constructions for Wireless Channels and Geodesic Flow on Lie Groups

David Karpuk

Aalto University

Helsinki, Finland

In this talk I will explain a few applications of algebra and number theory to communication over wireless channels. In particular, I will describe how to create and use number theoretic lattices suitable as codebooks for communication over wireless channels. Secondly, I will describe some recent work on how to slightly improve upon these methods by doing some basic numerical analysis on the Lie Group SO(n).