Spatial hopping in MIMO systems for impeded signal reception by multi-element avesdroppers in realistic environments

Author(s) - Institution(s):
Geoff Colman, CRC

Corresponding author email: geoff.colman@crc.gc.ca

Corresponding WG group: WG2

Abstract:

In multiple-input multiple-output (MIMO) systems employing precoding, knowledge of the precoding matrices used is essential for successful reception. Herein, a method is proposed to reduce the ability of a third-party eavesdropper to successfully receive precoded MIMO signals. Rather than precoding with the exact precoding matrices chosen by the intended receiver, transmission occurs by sequentially precoding using a set of precoding matrices clustered around the chosen precoding matrix. This is shown to significantly degrade eavesdropper reception while maintaining performance for the desired user. Channel measurement data from an urban microcell-type environment are used to show the efficacy of the proposed algorithm under realistic conditions.