Hamilton Institute

Congestion Based Routing strategies in multi-hop TDD-CDMA networks

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Abstract

In this talk, a network topology is presented that allows both peer-to-peer and non-local traffic in a cellular based TDD-CDMA system known as opportunity driven multiple access (ODMA). The key to offering appropriate performance of peer-to-peer communication in such a system relies on the use of a routing algorithm which minimises interference. The talk will present a study of the constraints and limitations on the capacity of such a system using a variety of routing techniques. A congestion based routing algorithm is presented that attempts to minimize the overall power of the system as well as providing a measure of feasibility.

This technique provides the lowest required transmit power in all circumstances, and the highest capacity in nearly all cases studied. All of the routing algorithms studied here allocate TDD time slots on a first come first served basis according to a set of pre-defined rules. This fact is utilised to enable the development of a combined routing and resource allocation algorithm for TDD-CDMA relaying. A novel method of time slot allocation according to relaying requirements is then developed. Two measures of assessing congestion are presented based on matrix norms. One is suitable for current interior point solution the other is more elegant but is not currently suitable for efficient minimisation and thus practical implementation.

Venue: Seminar Room, Hamilton Institute, Rye Hall, NUI Maynooth

Time: 1.00 - 2.00pm (followed by tea/coffee)

Travel directions are available at www.hamilton.ie

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