Hamilton Institute

Slotted versus non-slotted CSMA: throughputs
and fairness

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Abstract:
We consider a system consisting of n transmitters on a line. The channel used by transmitters is such that 2 transmitters cannot send messages at the same time if the distance between them is not larger than k, where k is a positive integer. The well-known CSMA protocol is often used to govern the behaviour of the transmitters in this scenario, and the performance of the system in this case is well-understood. We propose a discrete-time analogue of the CSMA protocol and in the case of a completely saturated system find exact formulas for the total throughput of the system governed by this algorithm and for individual throughputs of all transmitters. We then compare these throughputs with the throughputs achieved by the classical CSMA protocol. The fairness of both protocols is also compared. Finally, we discuss bounds for the throughput of a system where the first transmitter (source) is saturated and messages are relayed by the intermediate transmitters to the last one (destination). This is a joint work with Peter van de Ven (TU/e and EURANDOM).

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

Time: 2.00pm - 3.00pm (followed by tea/coffee)

Travel directions are available at www.hamilton.ie

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