

University of Lethbridge
Department of
MATHEMATICS & COMPUTER SCIENCE

Speaker: Stan Wagon
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**Title: A Computerized View of the
Frobenius Numbers**

Room: C620

Date: Wednesday, April 14, 2004

Time: 12:00 – 1:00

Abstract:

The Frobenius number of a set of positive integers (the basis) is the largest integer that is not a positive linear combination of them. For example, Chicken McNuggets come in sizes 6, 9, or 20. One cannot buy 43 McNuggets, but one can buy any larger number of them. A classic method of computing this number is to translate the problem to graph theory terms. The Frobenius number is essentially the maximum length shortest path in the graph. The shortest path tree also yields quickly a representation of any representable integer. I will show (1) how some improvements to Dijkstra's algorithm give much faster algorithms, (2) how a graph theory interpretation allows one to give a polynomial-time upper bound that is far superior to existing bounds, and (3) how computer experiments lead to a new conjectured lower bound. This is joint work with Dale Beihoffer.

Refreshments will be served.