DEPARTMENT OF MATHEMATICS & COMPUTER SCIENCE

WEEKLY STUDENT SEMINAR

Ian George Burleigh

PhD Candidate, University of Calgary
Computer Science and Music
(former Assistant Professor of Digital Audio Arts,
Department of Music, University of Lethbridge)

Friday – 15 February 2013

12:00 to 12:50 p.m.

UHall – B650

Title: Musical harmonics: Why music cannot be played in tune

Abstract: A vibrating string or a column of air produce a complex tone that is made of a harmonic series of partial simple tones. When two complex tones form a just musical interval, their partial tones coincide and the result is a calm aural sensation. The octave (an equivalence relation) and the fifth (a generator interval) generate the Western musical scales. The pentatonic, heptatonic, and twelve-tone (chromatic) scales represent "moments of symmetry" in their respective chains of fifths. Circles of just intervals do not close and therefore require tempering (intentional mistuning) of musical scales.

Demonstrated with animated graphs and synthesized sound.

OPEN TO ALL INTERESTED PARTIES