College of Arts and Sciences
Department of Mathematics
University of South Carolina

Math News

April 1-5, 2013

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PME Student Seminar
Analysis of Randomly Generated Networks
Cliff Gaddy, USC
Tuesday April 2nd 6:00 PM
LeConte 303B

The students so do enjoy interacting with those of us who stop by. Please announce, if appropriate, to your classes. They (and you) can find the needed information at the PME/GMC website at http://www.math.sc.edu/~pme/, which is linked to the math homepage under Student Activities.

Analysis Seminar
Littlewood-Paley Theory for Subharmonic Functions on Domains in R^N
Fred Stoll, USC
Wednesday April 3rd 2:30-3:30 PM
LeConte 312

In the talk we will consider analogues of the classical Littlewood-Paley G - function and square function (or square area integral) S for subharmonic functions on the unit ball of R^N. These functions were introduced by J. E. Littlewood and R. E. A. C. Paley in 1936 for analytic functions in the unit disc in their study of Fourier series. These functions have also been studied by Elias Stein for harmonic functions in the upper half-space of R^N. We consider analogues of some of the well known classical inequalities between these functions, including L^p inequalities between S and the subharmonic function f. The development, with necessary modifications, is as in the text "Trigonometric Series" by A. Zygmund for analytic functions. Although our setting will be the unit ball of R^N, the results can be extended to bounded domains with C^2 or $C^{1,1}$ boundaries.

Algebra & Logic Seminar
Synchronizing Automata and the Czerny Conjecture II
William DeMeo, USC
Friday April 5th 3:30-4:30 PM
LeConte 312

A synchronizing automaton is a finite automaton for which there is a word whose action "resets" the automaton, that is, leaves it in one particular state, no matter where it started. Such words are called reset words for the automaton. In 1968 Czerny conjectured that the maximum length of shortest reset words for synchronizing automata with n states is $(n-1)^2$. In this talk, I will mention some recent progress on this problem, and then describe how the problem can be viewed from a general algebra perspective, where a finite automaton is simply a unary algebra A. From this perspective, finding reset words amounts to finding constant terms in the term algebra of A, which are special elements of the one-generated free algebra over A. We will see how this observation and the Universal Algebra Calculator can be used to verify the Czerny conjecture for certain classes of automata.

Looking Forward: PME 11th Annual Integration Bee
Tuesday April 9th Refreshments served at 6:00 PM, Bee starting at 6:30 PM
LeConte 412

Prizes for overall winners as well as door prizes. The students so do enjoy interacting with those of us who stop by. Please announce, if appropriate, to your classes. They (and you) can find the needed information at the PME/GMC website at http://www.math.sc.edu/~pme/, which is linked to the math homepage under Student Activities.

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