

**GRADUATE STUDENT SEMINAR
and
DEPARTMENTAL COLLOQUIUM**

4:00 pm, Monday, March 11, 2002

Martin M-105

Refreshments: 3:30 p.m. Martin Hall, first floor

**Ambiguity Functions: What are they?
How do engineers use them?
Why are they interesting to mathematicians?**

Tom Macdonald

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Abstract

The ambiguity function provides a description of a finite-energy waveform (i.e., a square-integrable function) in both the time and frequency domains. This function has been used extensively to characterize radar and sonar applications. In this talk the definition of the ambiguity function is given, and a number of salient properties of the function are discussed. The application of the ambiguity function as a tool to analyze satellite communications is presented. Particular attention is paid to the development of the relationship between the ambiguity function and the performance of a communications system. Finally, the talk concludes with the introduction of the synthesis problem for ambiguity functions, which is a non-trivial mathematical exercise.

All graduate students and math majors are strongly encouraged to attend.

For further information see our website at www.ces.clemson.edu/~agorka/seminar/main.html