

MATH 5311

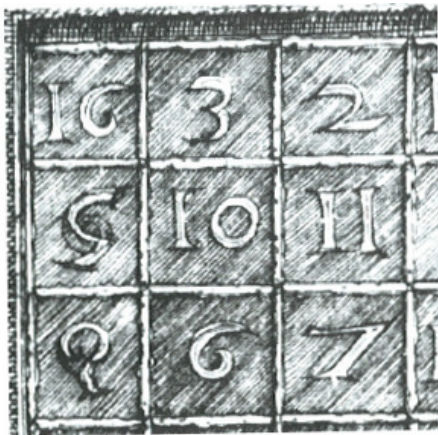
Applied Mathematics: Discrete Wavelets and Image Processing

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TR 18:30-19:50

BELL 130A

CRN 22888



We will study a recent topic in mathematics (discrete wavelets), and how it is applied to the practical problem of digital image processing, in particular digital image compression. While some of the underlying ideas go back to Joseph Fourier (1768-1830) and Alfred Haar (1885-1933), most of the material you will see is not older than 30 years.

Here are the major course objectives:

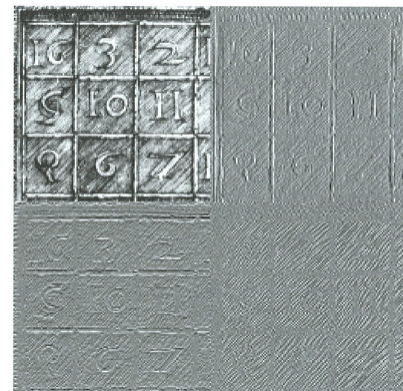
1. You will develop an understanding of the theoretical underpinnings of wavelet transforms and their applications.
2. You will learn how to use a computer algebra system for mathematical investigations, as a computational and visualization aid, and for the implementation of mathematical algorithms.
3. You will get a flavor of the ideas and issues involved in applying mathematics to a relevant current engineering problem.

The course will consist of a mixture of traditional lecture and computer lab work.

The course has a very applied flavor. You will use *Mathematica* extensively. Prior knowledge of the software is not required.

Prerequisites for this class include a working knowledge of Calculus II; some very minimal knowledge of matrix algebra will also be helpful.

The **Textbook** for the course is P. van Fleet: *Discrete Wavelet Transformations: An Elementary Approach with Applications*, Wiley. The book is available at Amazon.com for \$92.



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