

# IP/DIFFERENTIAL GEOMETRY/PDE SEMINAR

TUESDAY, MARCH 3, 2015

LOW 115

4-5PM

Wavelet Frame Based Numerical Methods: Connections and Applications

**Nick Henscheid**

(U OF ARIZONA)

Over the past several decades, a wide variety of computational techniques have been developed to solve the ill-posed linear inverse problems of imaging and image processing. Major examples include variational methods such as Tikhonov and TV, PDE approaches such as Perona-Malik and nonlinear diffusion, and sparsity based methods such as compressive sensing and wavelet shrinkage. Recent work has shown that a particular sparsity based approach, the wavelet frame method, is connected to both the variational approach and the PDE approach. This provides a new way to interpret wavelet methods and discretize PDE and variational methods. We will discuss these connections as well as some applications to low-dose cone beam CT.

For more information about this seminar, visit the DG/PDE Seminar Web page (from the Math Department home page, [www.math.washington.edu](http://www.math.washington.edu), follow the link **Seminars, Colloquia, and Conferences**).

The University of Washington is committed to providing access, equal opportunity and reasonable accommodation in its services, programs, activities, education and employment for individuals with disabilities. To request disability accommodation contact the Disability Services Office at least ten days in advance at: 206-543-6450/V, 206-543-6452/TTY, 206-685-7264 (FAX), or [dso@u.washington.edu](mailto:dso@u.washington.edu).