The Catholic University of America  
Department of Physics  
Colloquium  
Sandra Blevins  
The Catholic University of America  

The Distribution of Volatiles In Protoplanetary Disks  
Classical protoplanetary disks are full, volatile-rich disks that characterize the early stages of disk evolution. The condensation front for water, classically known as the snow line, and its evolution along with the central star, impacts the formation and composition of planetesimals in disks surrounding T Tauri stars, the progenitors of sun-like stars. For this study we measure the water vapor content and determine the location of the snow line, for four classical disks selected specifically for the strong water emission present in their mid-infrared spectra. To accomplish this we combine deep Herschel-PACS observations with high resolution Spitzer-IRS spectra to create molecular maps comprised of water lines with excitation temperatures that trace the disks' surfaces from ~ 1-100 AU. We use two-dimensional, axisymmetric radiative transfer modeling to retrieve the disks' dust structures and the RADLite raytracer to render model spectra for each disk, to determine the radial distance from the disk where water vapor vanishes, thus demarcating the snow line location. We present new water observations obtained with Herschel-PACS and fresh results including water vapor abundances and snow line radii.  

Wednesday, April 22, 2015  
4:00pm  
106 Hannan Hall  
Refreshments will be served at 3:45  

Sponsored in part by the Graduate Student Association  
For more information, please contact:  
Dr. Steve Kraemer  (202) 319-5315  

If you would like to request disability accommodations, please contact Patrick Burke at (202)-319-5315 to make arrangements.