

# ACiD seminar

Thursday, 28 February 2013  
E245

**Speaker:** Maxim Sviridenko, Warwick

New Approximation Algorithms for the Minimum Set Cover and Other Covering Problems

We study the relationship between the approximation factor for the Set-Cover problem and the parameters  $\Delta$  : the maximum cardinality of any subset, and  $k$  : the maximum number of subsets containing any element of the ground set. We show an LP rounding based approximation of  $(k - 1)(1 - e^{-\frac{\ln \Delta}{k-1}}) + 1$ , which is substantially better than the classical algorithms in the range  $k \approx \ln \Delta$ , and also improves on related previous works [Krivelevich, Okun]. For the interesting case when  $k = \theta(\log \Delta)$  we also exhibit an integrality gap which essentially matches our approximation algorithm. In addition we will discuss results on Generalized Min Sum Set Cover Problem. I will describe the state of the art, our results and open problems.