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**Speaker:** Amites Sarkar  
Western Washington University

Tuesday, April 19, 2016

1:00 PM

303 DeBartolo Hall

**Title:** Random geometric covering problems

**Abstract:**

Randomly scatter  $n$  discs of radius  $r$  onto a circular region of area  $n$ . What is the probability that every point of the region is covered by at least one of the discs? I'll survey a number of geometric covering problems, of which this is the simplest. The proofs include a mixture of geometric, combinatorial and probabilistic techniques - the main probabilistic tool is the Chen-Stein method of Poisson approximation. Although much current research in the area is motivated by possible applications to wireless sensor networks, the question above first arose as an intriguing problem in microbiology. There are also many open problems in the area. This talk is based largely on joint work with Paul Balister, Bela Bollobas, Martin Haenggi and Mark Walters.