



Global COE Seminar 第10回 離散幾何解析セミナー

日 時: 3月12日(金) 午後1時–2時30分
場 所: 京都大学理学研究科3号館552号室
講 演 者: Ravi Montenegro 氏 (University of Massachusetts Lowell)
題 目: Mixing times and new Cheeger inequalities for
finite Markov chains

アブストラクト:

The Perron-Frobenius theorem guarantees that a finite stochastic Matrix P satisfying the reversibility condition has a real valued eigenbasis with eigenvalues $1=\lambda_0(P)>\lambda_1(P)\geq\cdots\geq\lambda_{n-1}(P)\geq-1$. The spectral gap $\lambda=1-\lambda_1(P)$ governs key properties of the associated random walk. Several authors have shown lower bounds on this gap in terms of geometric quantities on the underlying state space, known as Cheeger inequalities. We show sharp Cheeger-like lower bounds on λ , both in the edge-expansion sense of Jerrum and Sinclair, the vertex-expansion notion of Alon, and a mixture of both. Cheeger-like lower bounds on $1+\lambda_{n-1}$ follow as well, in terms of a notion of a fairly natural notion of edge-expansion which is yet entirely new.