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*Snake Algorithm: A Rejection-Free Sampler for Binary Matrices  
with Fixed Margins*

**Wednesday, February 28th, 2024**

**11:50 AM**

**96 Frelinghuysen Road, CoRE Building, Room 431**

**Zoom Meeting: Meeting ID: 969 0606 4706**

**Password: 745339**

<https://rutgers.zoom.us/j/96906064706?pwd=ZklvbExpRVBJQ3c5dUhhYTFuR2ZrZz09>

**Light refreshments will be served in Hill 452, 11:15am**

**Abstract:** This talk presents a new algorithm for sampling binary matrices with fixed row and column sums, a problem with applications in network, ecology, differential privacy, and theoretical computer science. We introduce the 'Snake' algorithm, unlike existing methods, finds a random, swappable loop at every step. Our algorithm features a rejection-free design and scales better with the matrix's size, proving particularly efficient for high-dimensional and sparse matrices common in practical applications.

**Bio:** I am interested in Monte Carlo, Markov chain, and Markov chain Monte Carlo. I am also actively learning quantum computing recently.