

Title: Power Efficient Pseudo-random Number Generators

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Proposal:

Idea 2:

Pseudo random number generators are inherently limited by the period of random sequences. Currently proposed solutions to increased aperiodicity include using a physical randomness based RNG (such as one using oscillation based jitter [3]) to generate the seed for a PRNG [1], and using a potentially less random PRNG but introducing randomness from a Markov Chain based whitening scheme [4][5]. We plan to compare these two schemes, and evaluate the power consumption, area, and statistical randomness [2].

References:

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[3] Y. Zhang, J. Jiang, Q. Wang and N. Guan, "A Self-Timed Ring Based True Random Number Generator on FPGA," *2018 14th IEEE International Conference on Solid-State and Integrated Circuit Technology (ICSICT)*, Qingdao, China, 2018, pp. 1-3, doi: 10.1109/ICSICT.2018.8565658.

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