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Continuous Dynamical Systems as Pseudo Random Number Generator

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Abstract: In this study, we have proposed a pseudo random number generator (PRNG) based on well-known two chaotic dynamical systems: Rössler system and Duffing oscillator. We test our PSRNGs using statistical test suite NIST and we have shown that both systems pass the test and they are feasible for cryptographic usage. Finally, as application we use our PRNGs in image encryption and presents the performance of them in encryption.

Keywords: pseudo random number generators, image encryption, chaos