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Random Number Generation using IBM Quantum Processors

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Random numbers are used extensively in both cryptography and simulation, but are difficult to generate reliably using classical methods. We investigate random number generation on the ibmq_16_melbourne quantum processor, a 15-qubit superconducting quantum computer. By applying simple post-processing techniques to the random bits generated, we were able to extract a sample of random bits which passed the NIST Statistical Test Suite. This shows that, with some post-processing, solid-state quantum computers such as IBM quantum processors can be used to generate random numbers of sufficient quality for cryptographic applications.

Apply to be considered for a student ; award (Yes / No)?

Yes

Level for award;(Hons, MSc, PhD, N/A)?

MSc

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