

# Randomness and quantum computation

**André Nies**

Auckland

Randomness of infinite bit sequences can be defined via algorithmic tests. We provide an introduction and some initial results. Thereafter we cover connections to quantum computation and quantum Kolmogorov complexity. For this we discuss the model of a quantum Turing machine. Recent work with Volkher Scholz at Gent University attempts to introduce analogs for sequences of quantum bits of incompressibility and Martin-Löf randomness.