# Quantum computing

## An introduction

Oswaldo Gomez

Al Engineering

20 de enero de 2020

## Basic Unit of information

Traditional computation works with 0 and 1 as  $\,$ 

## Computational basis states

Qubits can be in different states *other* than  $|0\rangle$  or  $|1\rangle$ . It is possible to form *linear combinations* of states, called superpositions:

$$|\psi\rangle = \alpha |0\rangle + \beta |1\rangle$$

The numbers  $\alpha$  and  $\beta$  are complex numbers and  $|\alpha|^2 + |\beta|^2 = 1$ .

#### **Observaciones**

Si únicamente se invierte en el activo riesgoso, el proceso Xt tiene caídas de mayor magnitud que si se combinan inversión y reaseguro e incluso sólo reaseguro.

Razón: Al invertir en un activo riesgoso estamos sujetos a la volatilidad de este.

# Bibliografía

- Glasserman, Paul; Monte Carlo Methods in Financial Engineering, Springer-Verlag, New York 2004.
- Glynn, Peter W. Asmussen Soren; Stochastic simulation, algorithms and analysis; Springer Science+Bussines Media, 2007
- Hanspeter, Schmidli; Asymptotics of ruin probabilities for risk processes under optimal reinsurance policies: the small claim case.