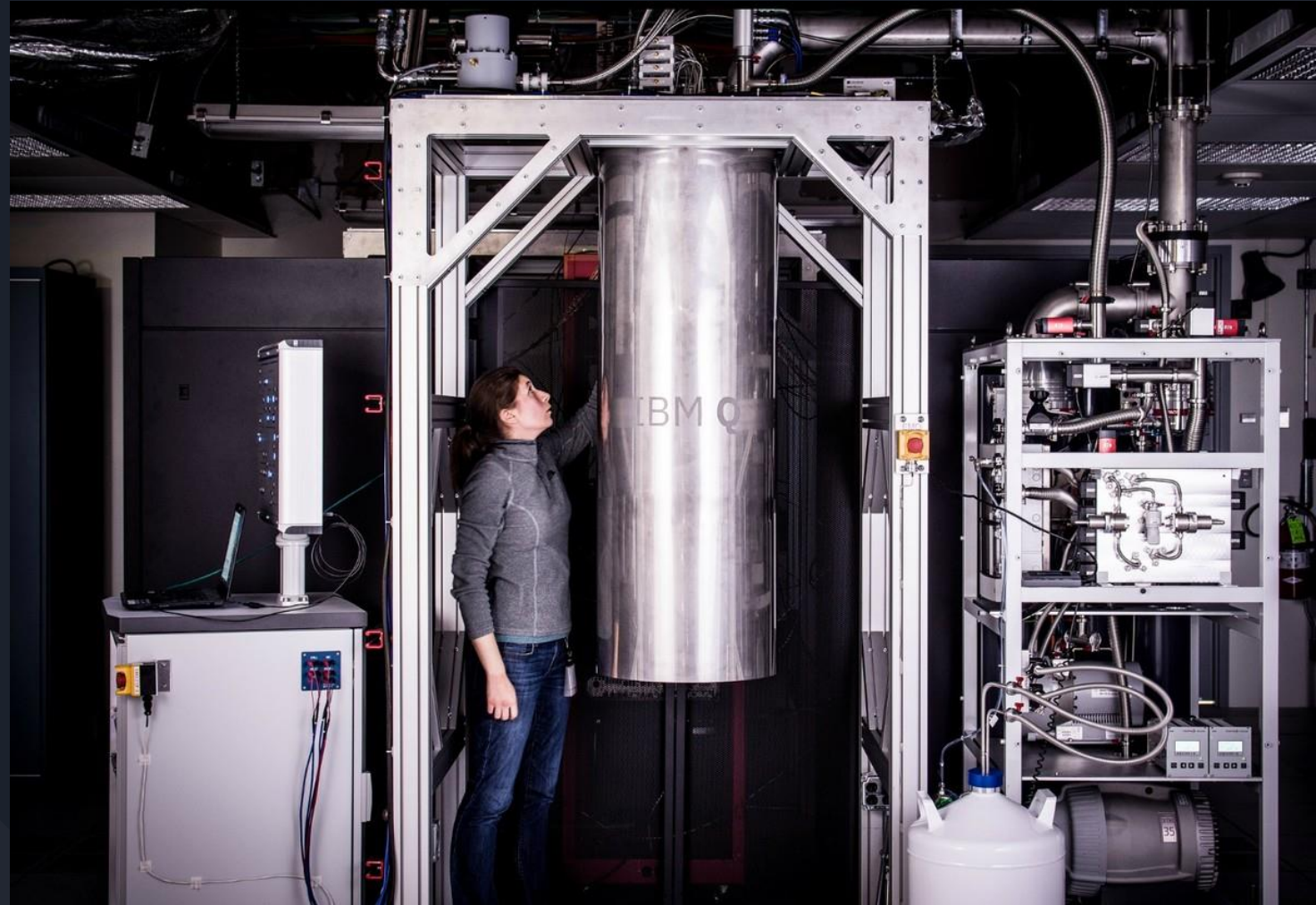


ECM-245 Grupo 3 Tema: IBM Quântico

Gustavo Villela
Lucas Coelho
Raphael Hungria
Rodrigo Carvalho

RA: 17.01736-0
RA: 15.03863-7
RA: 17.04015-9
RA: 16.03378-7



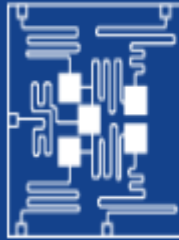
O IBM Quântico



A IBM tem como foco de produzir um computador quântico que tenha uso comercial mundial

IBM Q Experience

IBM Q 5 Tenerife [ibmqx4]



Frequency (GHz)

T1 (μ s)

T2 (μ s)

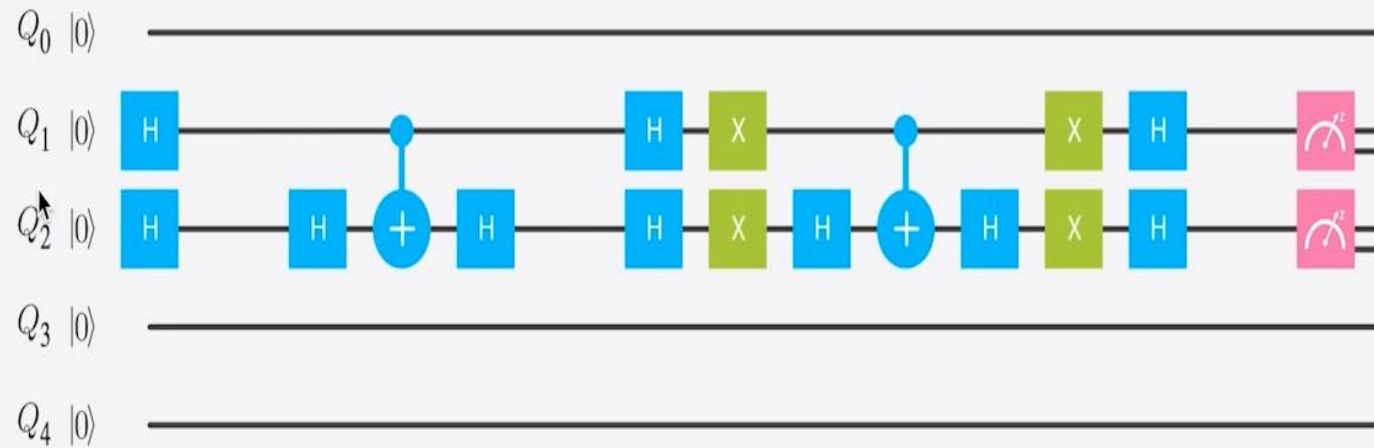
Gate error (10^{-3})

Readout error (10^{-3})

MultiQubit gate error (10^{-3})

Last Calibration: 2019-03-18 07:06:26

Q0	Q1	Q2	Q3	Q4
5.25	5.30	5.35	5.43	5.18
49.90	37.60	43.50	47.70	51.30
34.20	26.50	36.70	16.50	13.10
0.94	1.03	1.03	1.80	2.32
6.00	7.00	3.10	7.10	8.70
CX1_0	CX2_0	CX3_2	CX4_2	
3.12	2.42	5.96	6.50	
	CX2_1	CX3_4		
	3.38	4.49		

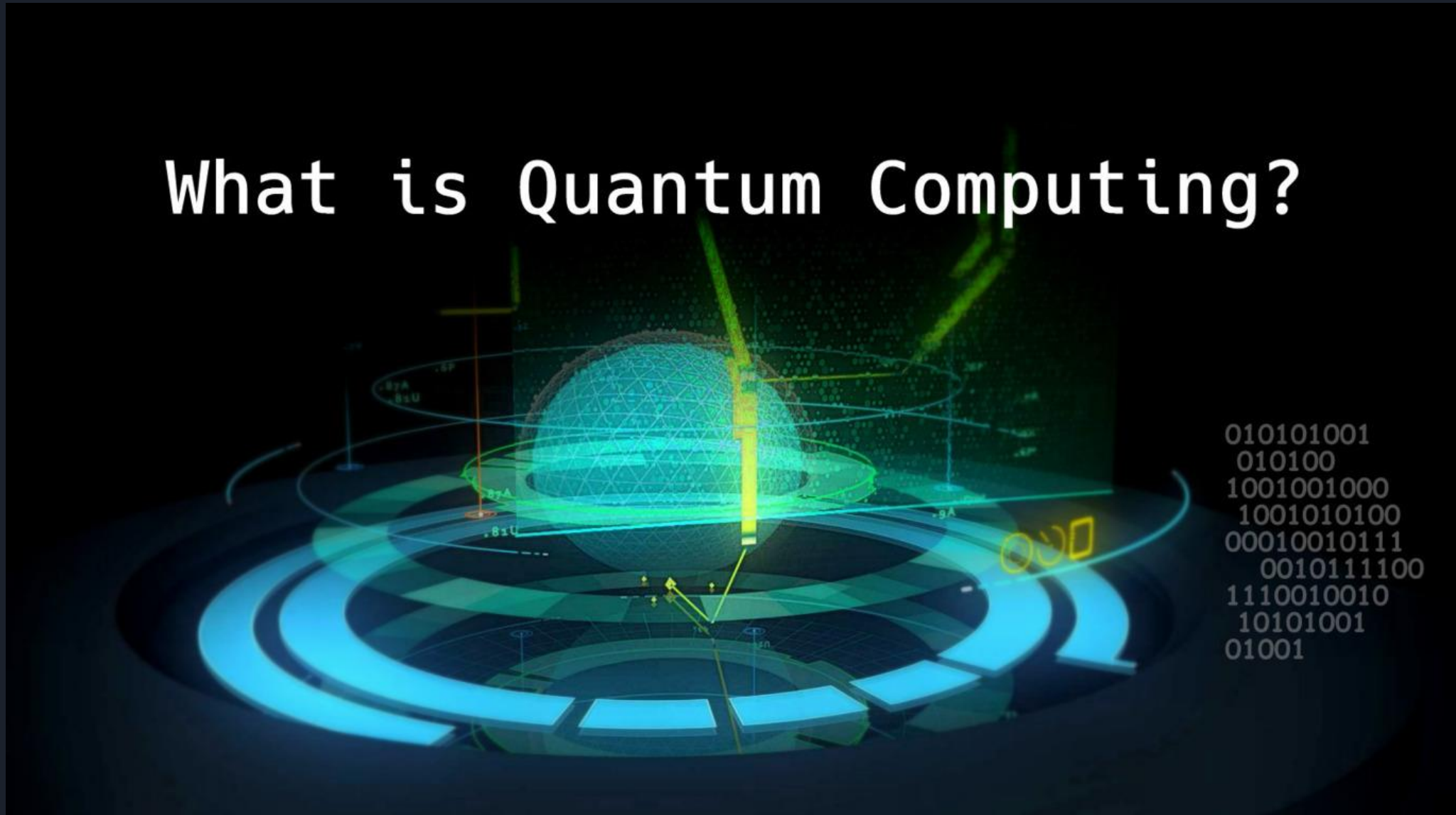


Distribution



O que é computação quântica?

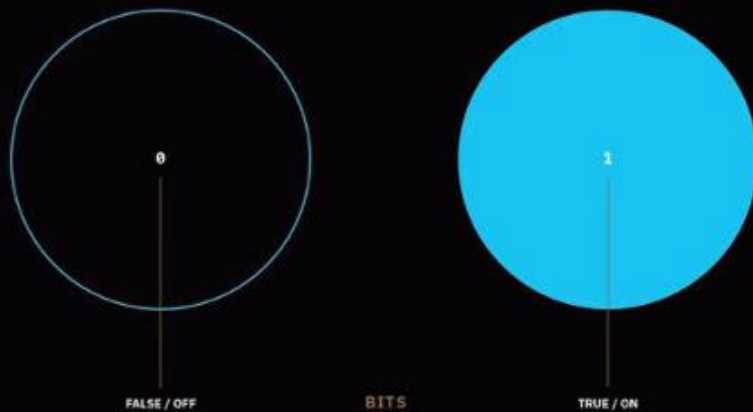
What is Quantum Computing?



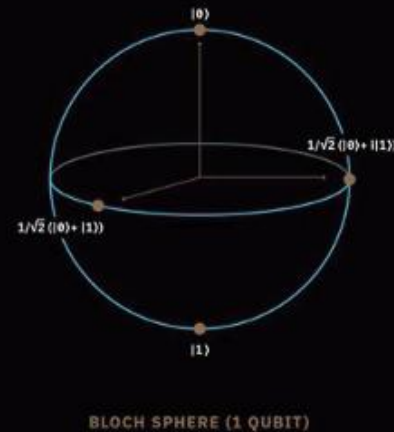
Qubits

Why is quantum different?

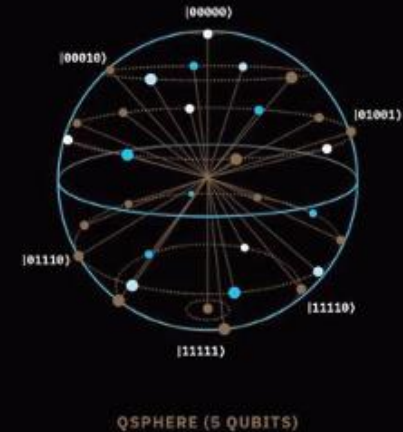
1. Superposition



Classical states

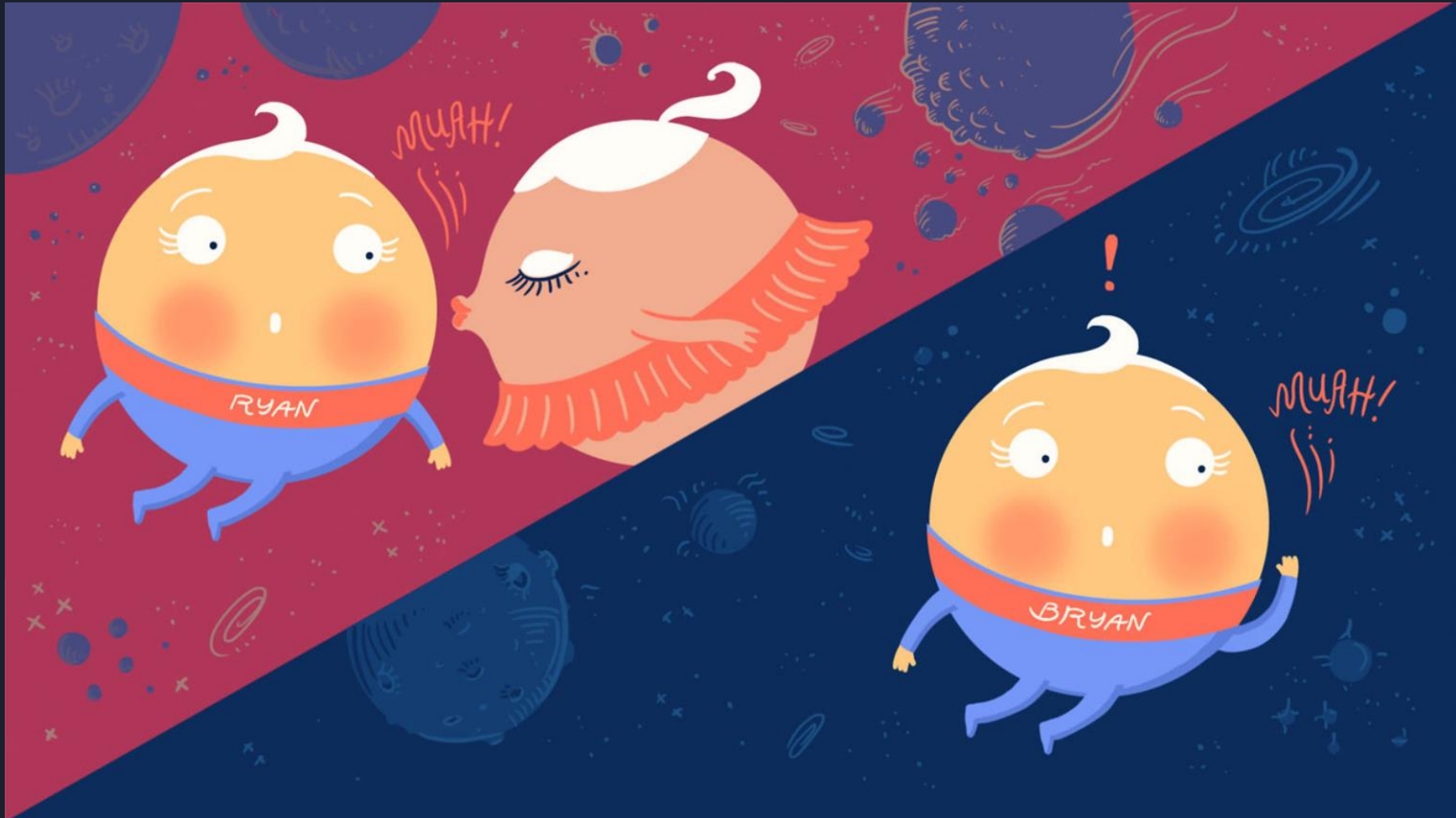


Quantum states



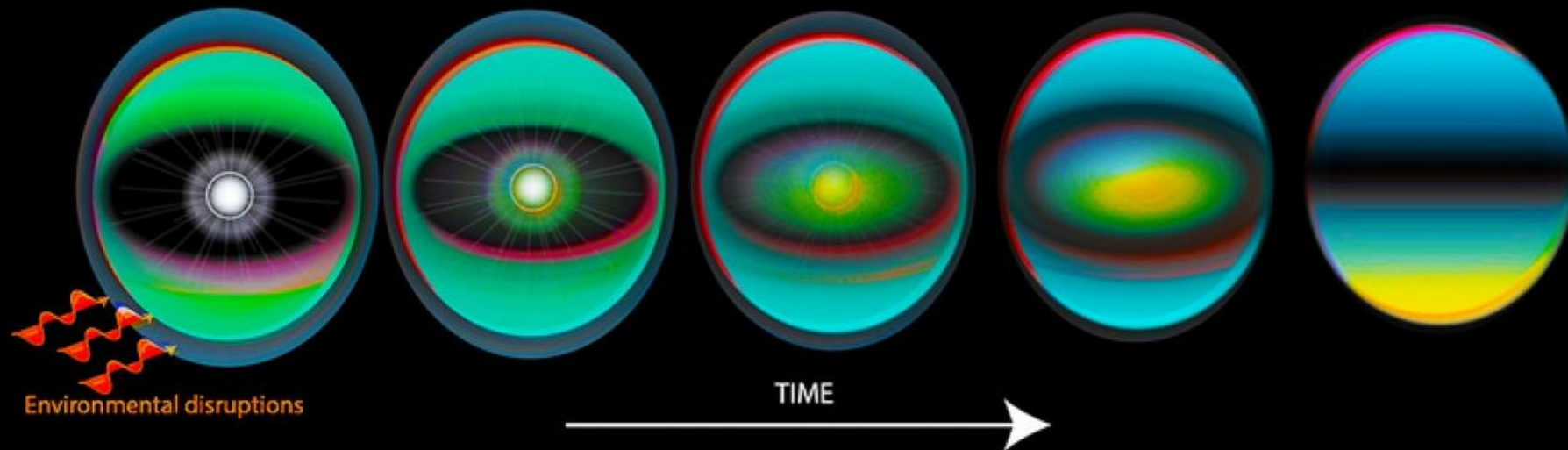
N qubits
 2^N paths

Emaranhamento Quântico

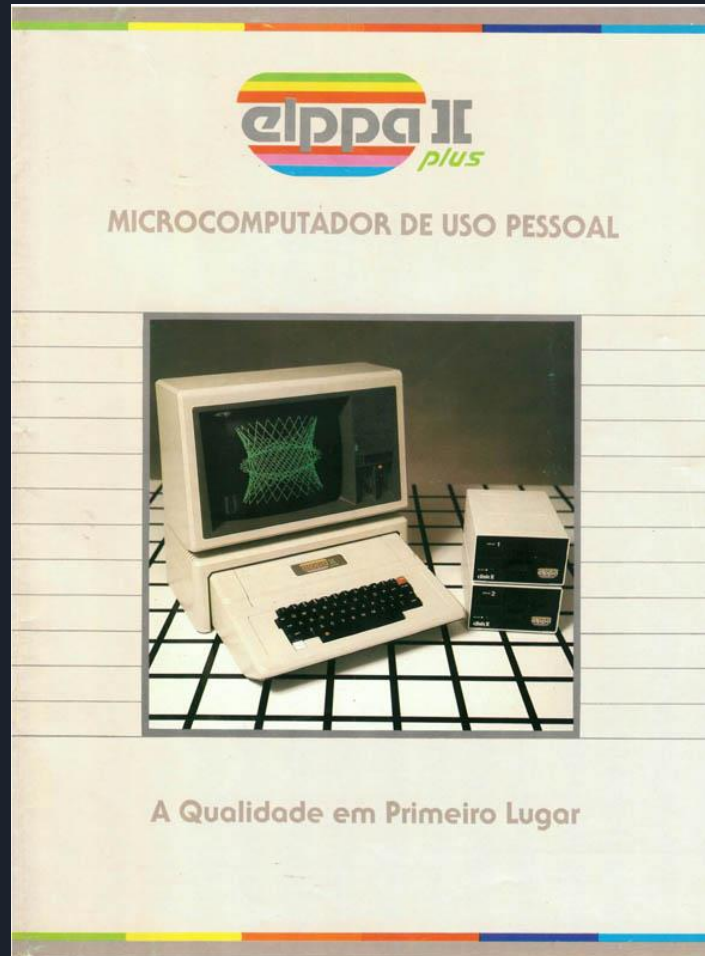


Tempo de Coerência

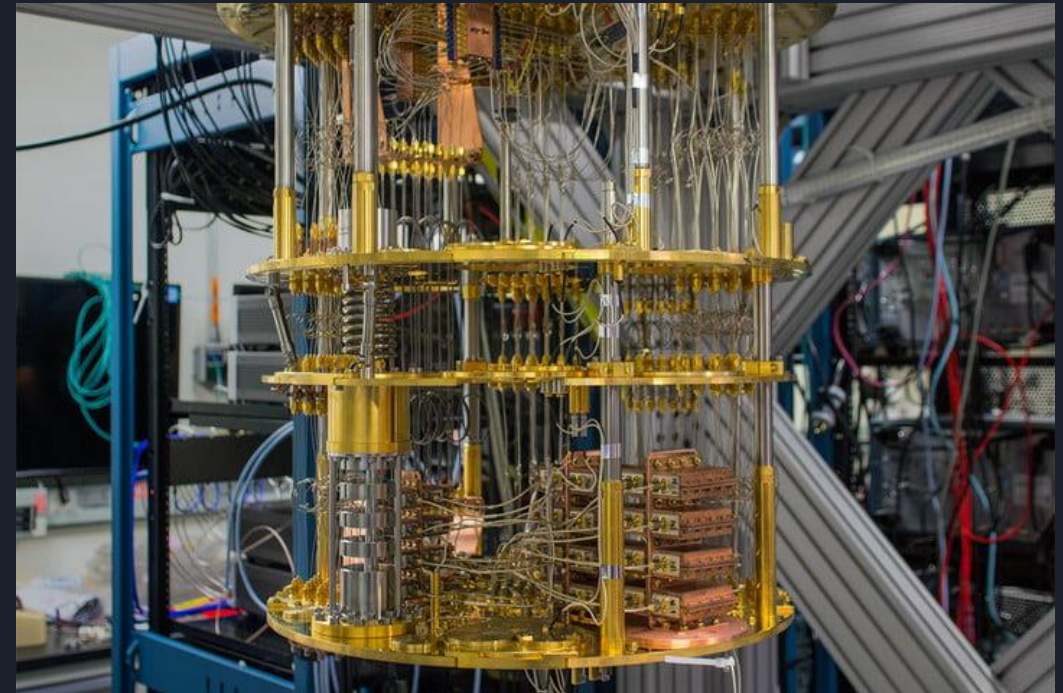
Coherence time: How long can a quantum state live?



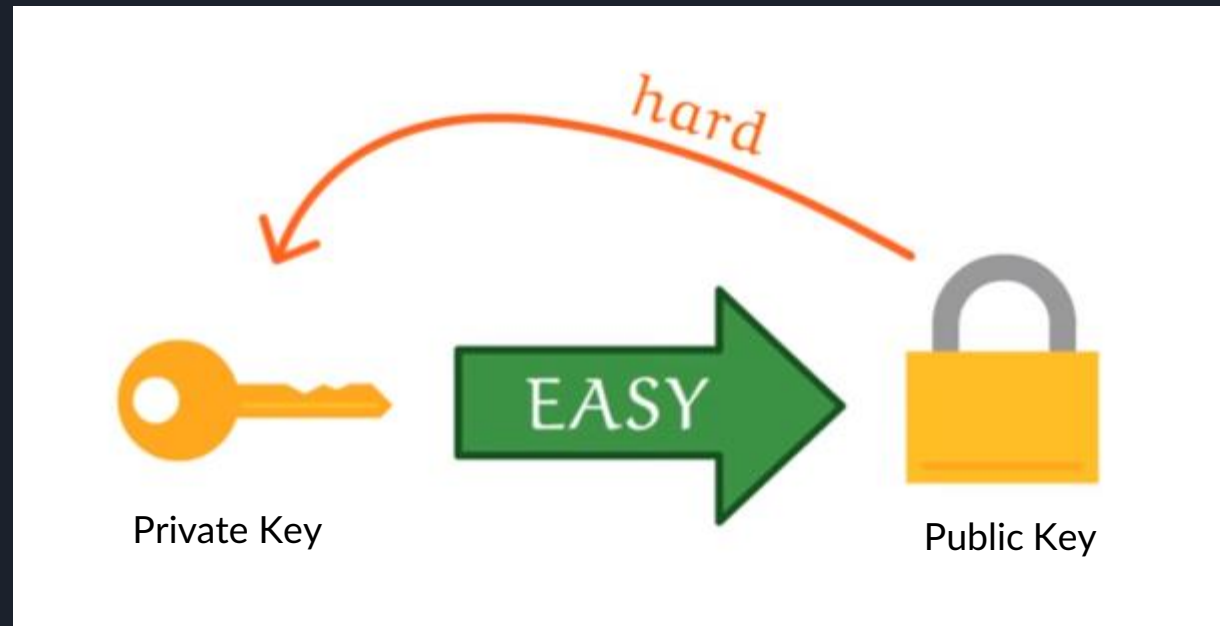
Porque investir em computadores quânticos?



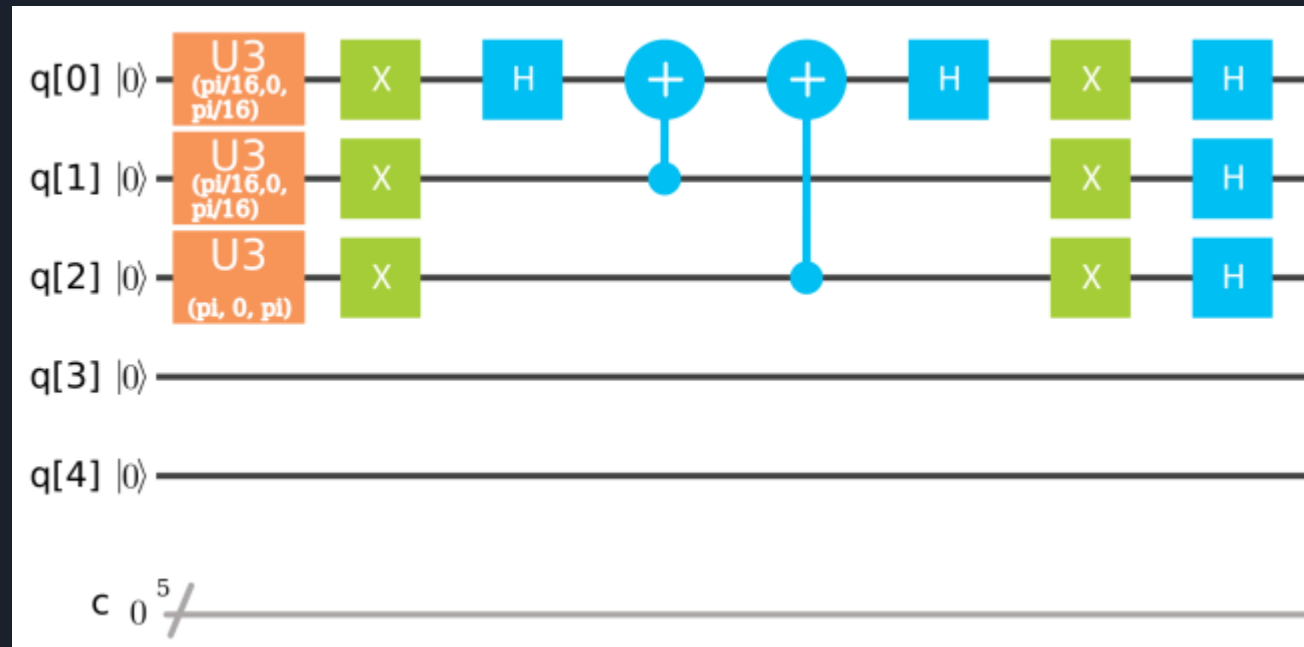
X



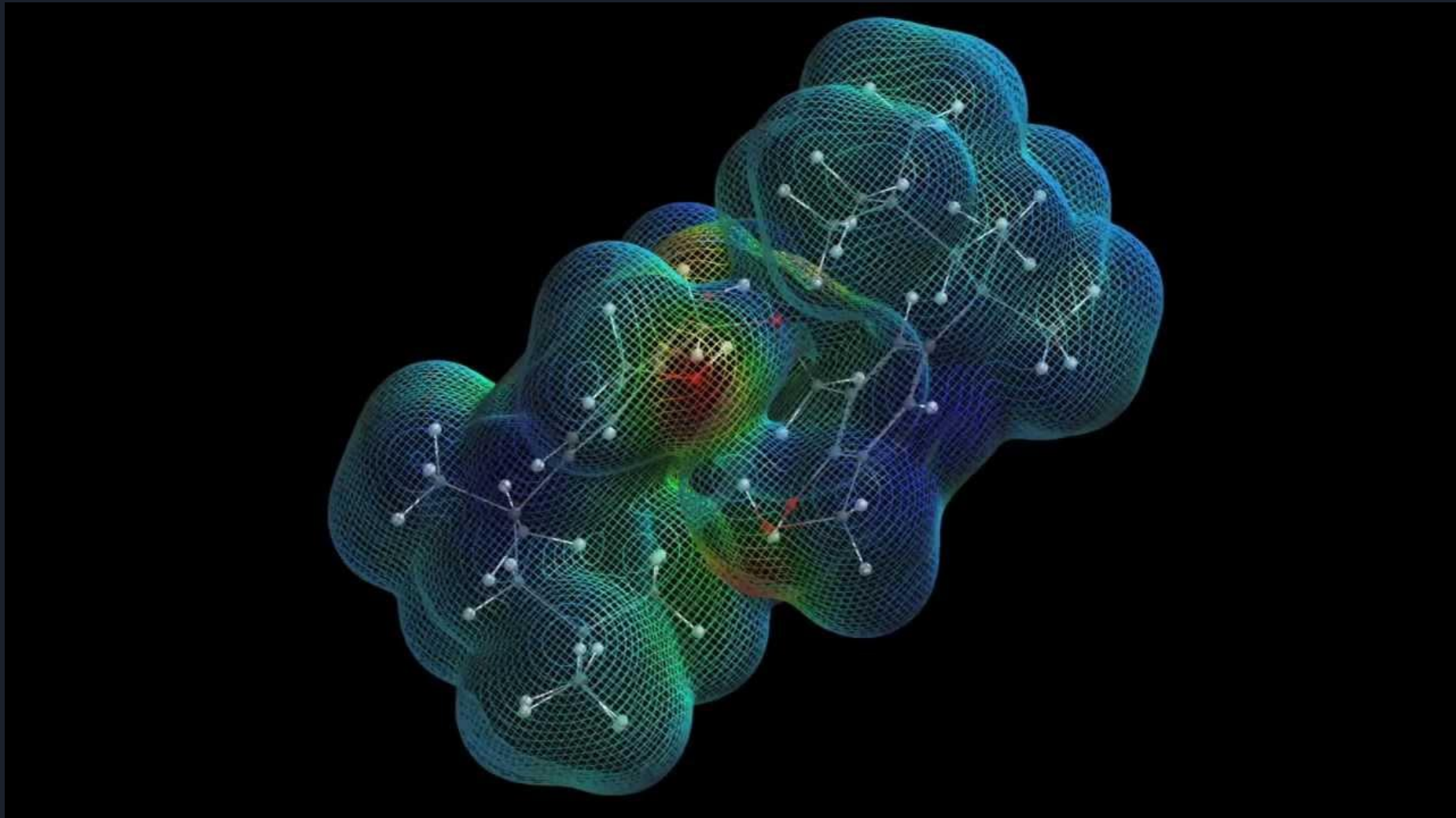
Criptografia

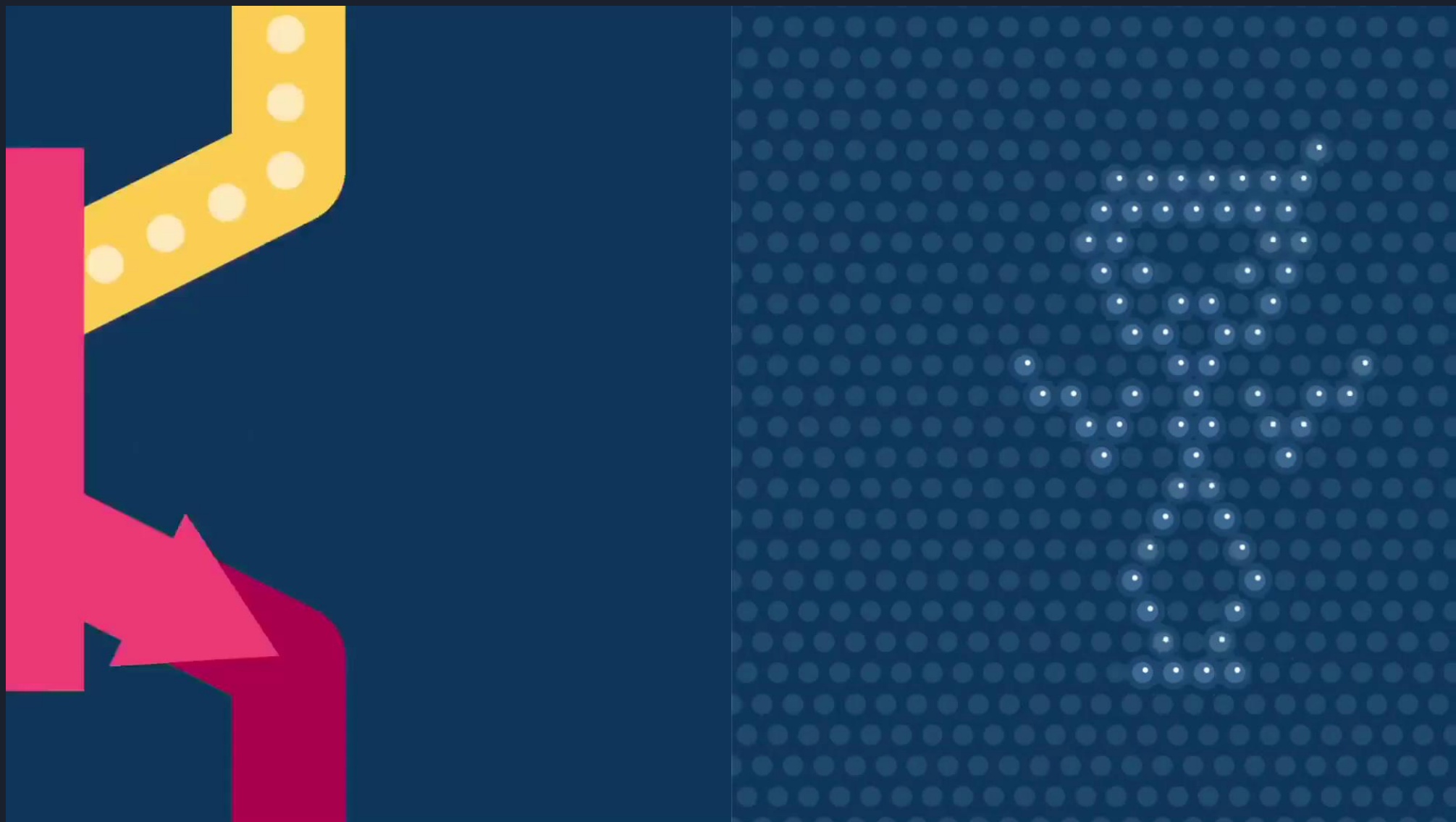


Busca em Bancos de Dados



Simulações





O uso quântico dentro de nossas casas



Fontes Bibliográficas

Seeker, We're Close to a Universal Quantum Computer, Here's Where We're At, Disponível em <<https://www.youtube.com/watch?v=6yaY4Fw-ovM>> acesso em 05/03/2019

Veritasium, How Does a Quantum Computer Work, Disponível em <https://www.youtube.com/watch?v=g_laVepNDT4> acesso em 05/03/2019

Kurzgesagt – In a Nutshell, Quantum Computers Explained – Limits of Human Technology, Disponível em <<https://www.youtube.com/watch?v=JhHMJCUMq28>> acesso em 06/03/2019

IBM, What is quantum computing, Disponível em <<https://www.research.ibm.com/ibm-q/learn/what-is-quantum-computing/>> acesso em: 06/05/2019

Bonsor, K.; Strickland, J. How Quantum Computers Work, Disponível em <<https://computer.howstuffworks.com/quantum-computer1.htm>> acesso em: 06/05/2019