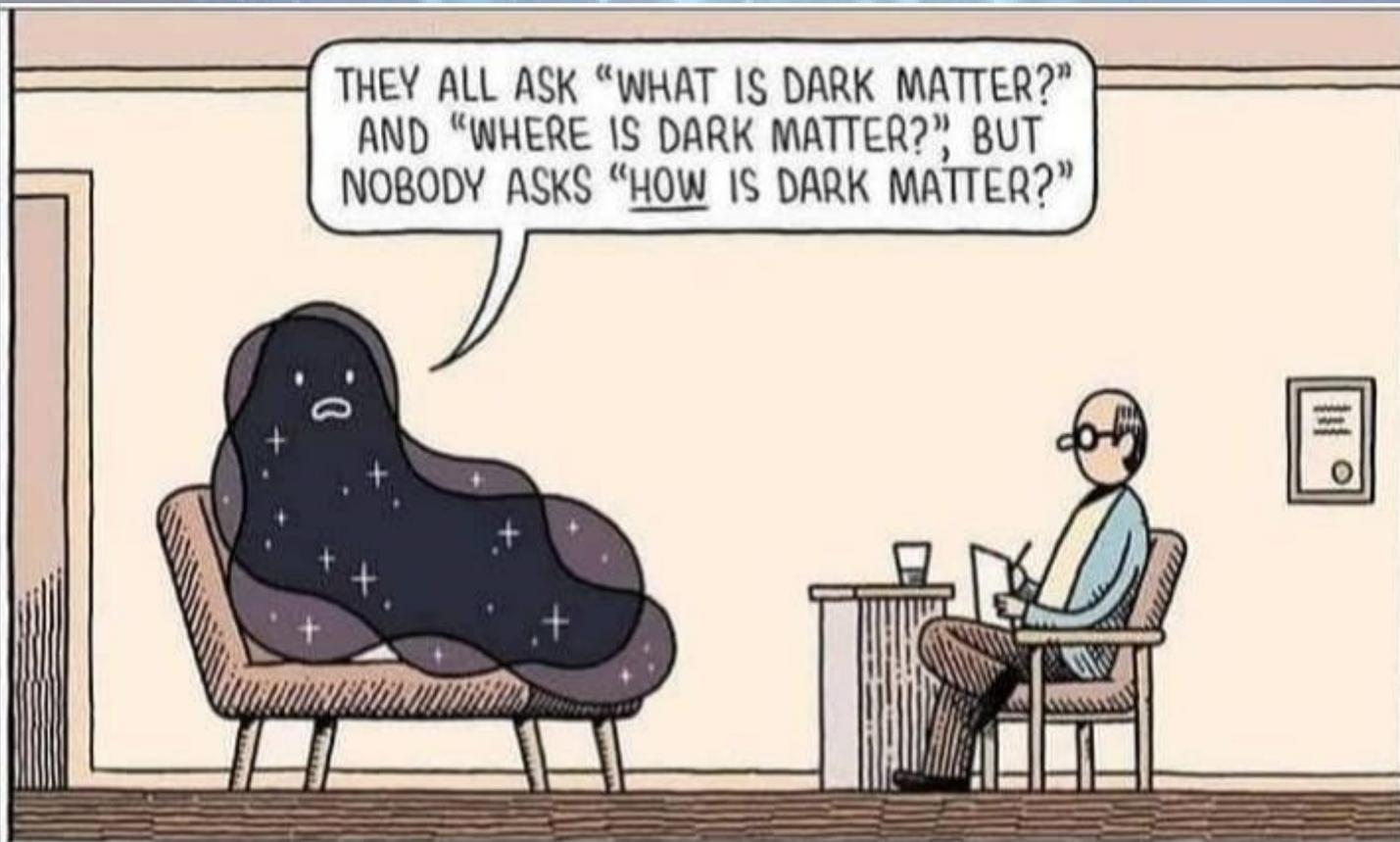




Session will start at
12.25 EET / 10.25 UTC



Session will
start at
12:25 EET
10:25 CET



The Big Quantum Theory: An Azure Story by [André Melancia](#)





Presents...

 A Lunar Cat production...



From the producer of...

SQL Curiosities

Curiosity killed the kitten



Upgrade Your Grey Cells and use Azure Synapse Analytics

Andre Melancia
FDC Conf
2021-09-16



Coming soon to a conference near you...



The Big Quantum Theory
An Azure Story



2020-07-04 19:01 UTC
Message from: ?
"Machine Learning is full of stars.
An Azure Story"

How To Be A Human Being - For Beginners



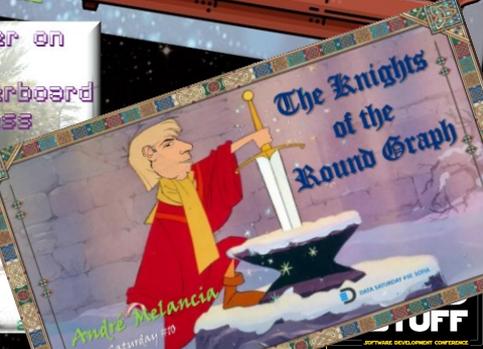
Featuring
Andre Melancia



by
Andre Melancia



Murder on the Motherboard Express



The Knights of the Round Graph

Andre Melancia

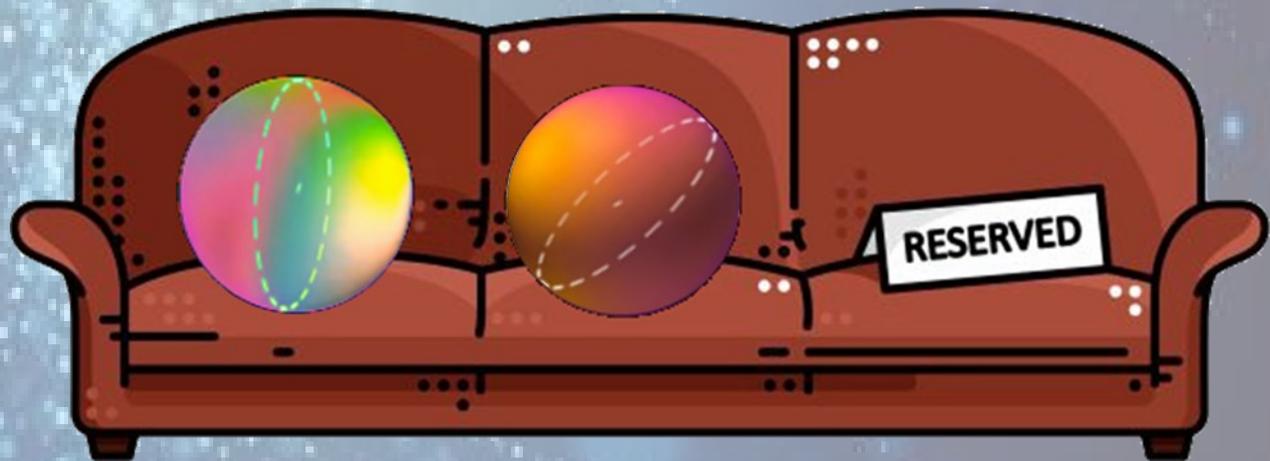
STUFF
SOFTWARE DEVELOPMENT CONFERENCE

The background is a dark space filled with numerous small, bright stars of varying colors (white, blue, yellow). On the right side, a portion of the Earth is visible, showing its blue oceans and white clouds against the blackness of space.

**QUANTUM
WARS**

The Big Quantum Theory

An Azure Story



Andre' Melancia

BUILD STUFF

VILNIUS, LIETUVA

2021-11-18

Get-HumanInfo "Andre' Melancia"

→ Food devouring expert

→ Lunar Cat

→ Owner / Principal Consultant

→ Meow us at LunarCat.PT

→ Microsoft Certified Trainer (MCT)

→ Contacts

→ <https://Andy.PT> 

→ Andy@Andy.COM.PT

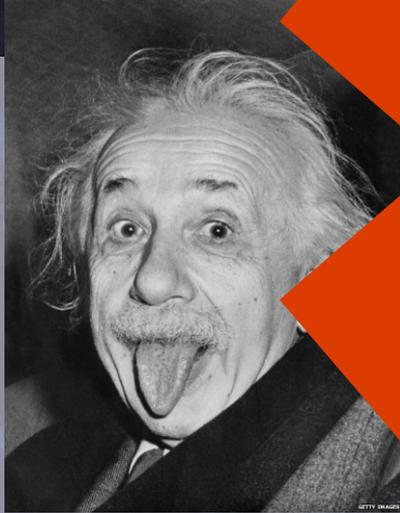
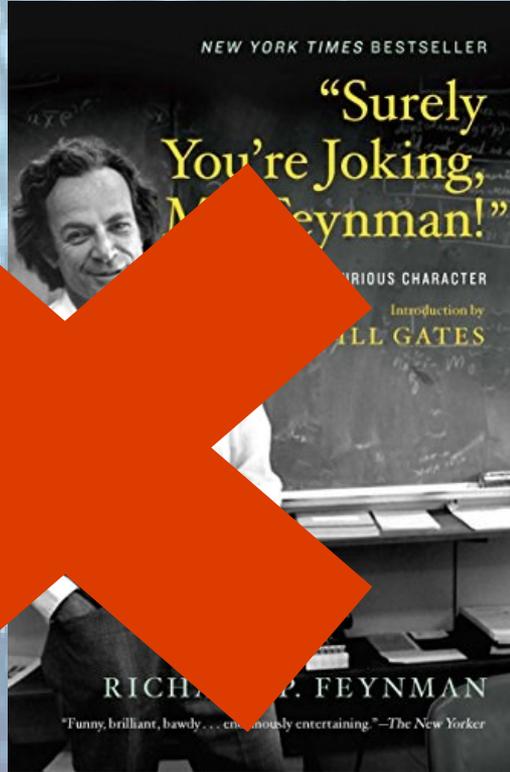
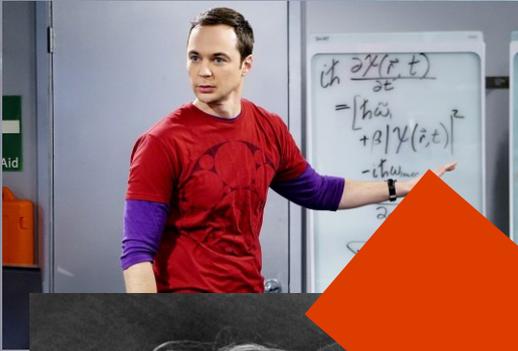
→ <https://LinkedIn.COM/in/AndreMelancia>

→ <https://Facebook.COM/Andy.COM.PT>

→ <https://Twitter.COM/AndyPT>



Intelligence level required for this session...



The Big Quantum Theory: An Azure Story by **André Melancia**



Neanderthals developed tools...

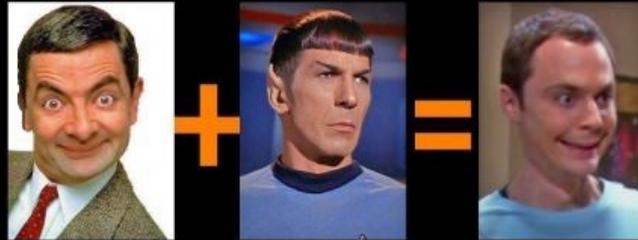
- Count with fingers
- Abacus
- Mechanical machines
- Basic electronics
- Chip electronics (e.g. CPU)
- Artificial Intelligence / Machine Learning
- Quantum stuff...



Traditional vs Quantum?

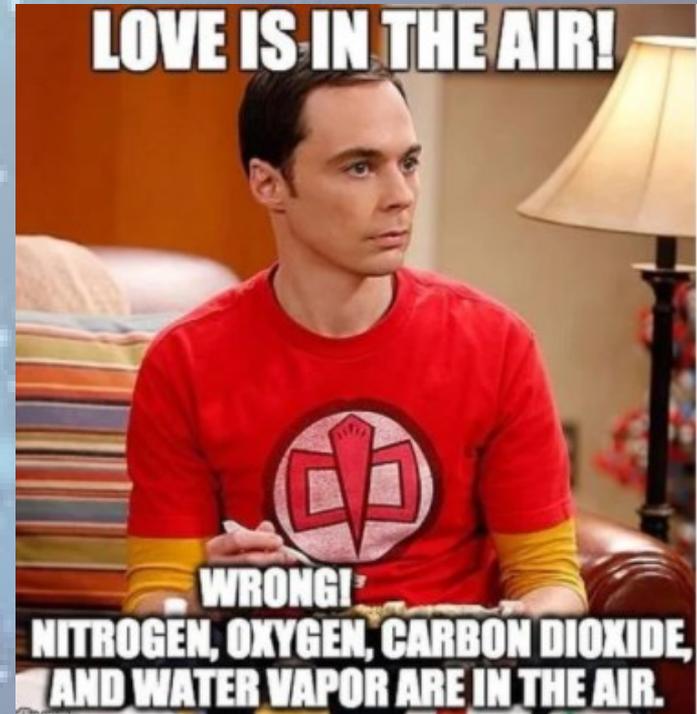
- Bits vs qubits
- Certainty vs Uncertainty
- Reading a qubit may invalidate it's state
- Weirder stuff happens...

The Big Bang Fusion!



It's expanding ever outward but one day...

- Usages for AI and Machine Learning?
- Usages for Quantum?
 - Optimisation [...]
 - Health (cancer, other diagnostics...)
 - Traffic management
 - Faster machine learning
 - Skynet
 - Quantum Cryptography, etc.
 - Cryptography cracking
 - [...]



We built a BIT (we built the pyramids without bits)

- Bit values:
 - "0"; "1"; 3-state (disconnected)
- Values correspond to electric tension
- Value "0" (typically theoretical "Low")
 - From +0,0V to approx. +0,7V
- Value "1" (typically theoretical "High")
 - From +2,0V to +5,0V (traditional)
 - From +2,0V to +3,3V (low power)
 - Even less...
- 99% guarantee of correct values
 - CRC and checksums to compensate.



Our best and brightest

→ CPUs with instruction sets (use "Assembly")

→ `MOV reg1, reg2`

→ `ADD reg3, 10 + reg4`

→ `MULT`, etc.

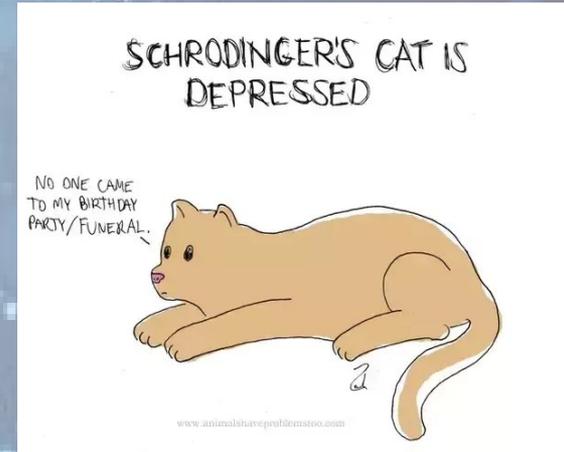
→ Growing bigger

→ OS

→ Libraries

→ Higher level programming languages

→ A simple **Print** ("Hello CPU World") would take hundreds of assembly/machinecode instructions



As every galaxy was formed...

→ Qubits

→ <https://en.wikipedia.org/wiki/Qubit>

→ Quantum logic gates

→ https://en.wikipedia.org/wiki/Quantum_logic_gate

→ Quantum Cryptography

→ https://en.wikipedia.org/wiki/Quantum_cryptography

→ Practical stuff

→ <https://docs.microsoft.com/azure/quantum>

→ <https://azure.microsoft.com/services/quantum>



Microsoft Quantum resources

Get Started with the Quantum Development Kit (QDK)

<https://aka.ms/get-started-qdk>

Microsoft Learn - how to get started with Q# and how to solve an optimization problem

<https://aka.ms/learnqc>

1. Azure Quantum Developer online workshop <https://aka.ms/aqdw>
Quantum Development Kit <https://docs.microsoft.com/en-us/quantum/>

Quantum Katas <https://github.com/microsoft/quantumkatas>

Open Source Libraries and Samples

<https://github.com/microsoft/quantum>

<https://github.com/microsoft/quantumlibraries>

<https://github.com/microsoft/QuantumLibraries/tree/master/MachineLearning>

Join the Q# community <https://qsharp.community>

Stay up to date on Q# development activities <https://aka.ms/qsharp-blog>

Stay up to date on the Microsoft Quantum Program <https://aka.ms/MQBlog>

STOLEN SLIDE 😊 Microsoft Stream



Quantum-focused programming language



Sample code & libraries

Ujjwal Kumar
WW Cloud Solution Architect,
One Commercial Partner, Microsoft
WWC Quantum Computing – SME
<https://www.linkedin.com/in/ujjwalk/>
<https://twitter.com/ujjwalkr/>

Questions?

Klausimai?



WANTED

SCHRÖDINGER'S CAT



DEAD AND ALIVE

LAST SEEN BEFORE
BOX WAS CLOSED

Labai ačiū!
Thank you!
Благодаря!
!آپکا شکریہ!
धन्यवाद !
Hvala vam!
Danke!
මියාට ස්තූතියි
Obrigado, pá!
Ευχαριστώ!
¡Muchas gracias!
धन्यवाद
Merci beaucoup!
Terima kasih!
Grazie mille!
Ďakujem!
Mulțumesc!
Дуже дякую!
Dziękuję Wam!
Mockrát děkuju!
Mange tak!
Kiitos!
Takk fyrir!
Dank u wel!
Takk!
Dank je!
Tack så mycket!
Köszönöm!
Go raibh maith agaibh!
Diolch!



ANDRÉ MELANCIA



Andy.PT
LunarCat.PT



Our whole programming in a hot, CPU state
Then nearly fourteen months ago quantum started, pause()
The cloud began to cool, the qubits began to rule...