



# Building A Computer Without A Computer.

( Introduction To Error Correction And Fault Tolerance Computation. )

D. Ponarovsky<sup>1</sup>

<sup>1</sup>Faculty of Computer Science  
Hebrew University of Jerusalem

Qubit meeting 2022-23, Israel Quantum Tech Community.

# The Goal Of The Talk

## Blocktitle

- Motivation. Answer on what we are fighting for. Give a non-cryptographic advantage of quantum computing.

# The Goal Of The Talk

## Blocktitle

- Motivation. Answer on what we are fighting for. Give a non-cryptographic advantage of quantum computing.
- Reviewing the current status and latest results. Sharing the view of the error correction scientist.

# The Goal Of The Talk

## Blocktitle

- Motivation. Answer on what we are fighting for. Give a non-cryptographic advantage of quantum computing.
- Reviewing the current status and latest results. Sharing the view of the errors correction scientist.
- Engaging. Build a common language, explain all the frightening terms (Noise, Thresholds, NISQ, Advantage). Talking Business.

# Motivation.

## The Question.

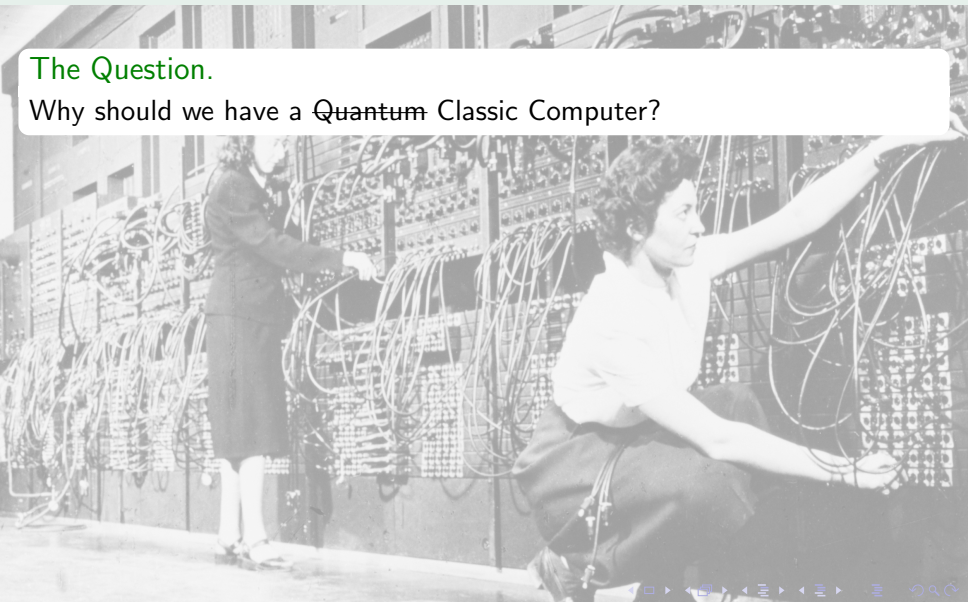
Why should we have a Quantum Computer?



# Motivation.

## The Question.

Why should we have a ~~Quantum~~ Classic Computer?



# Motivation.

## The Question.

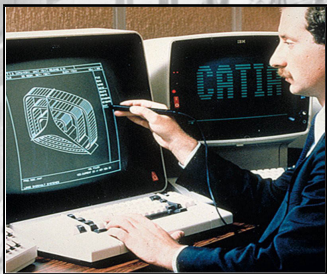
Why should we have a ~~Quantum~~ Classic Computer?



# Motivation.

## The Question.

Why should we have a Quantum Classic Computer?





# Motivation.

## The Question.

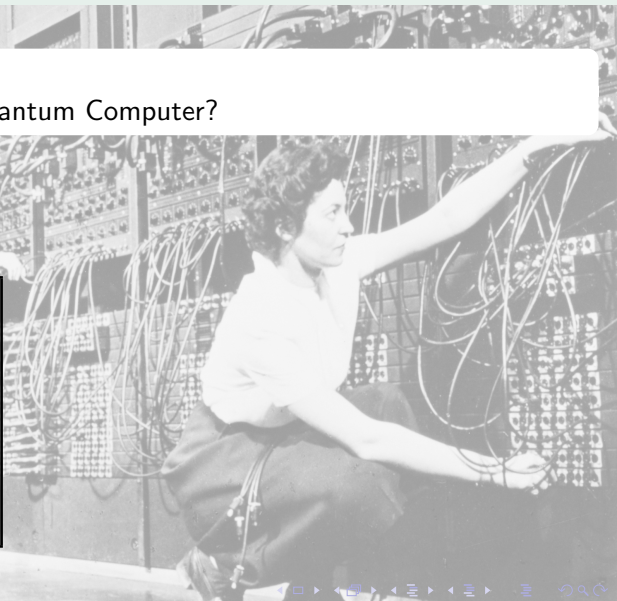
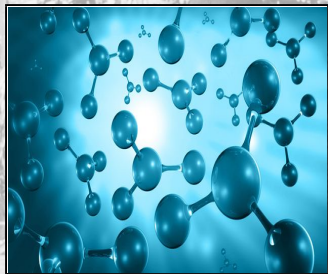
Why should we have a Quantum Classic Computer?



# Motivation.

## The Question.

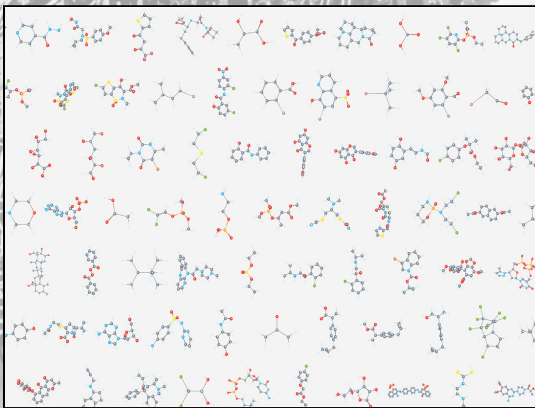
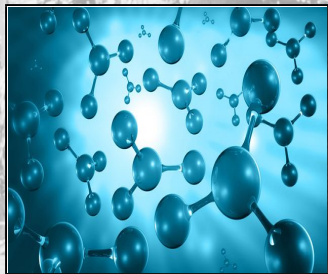
Why should we have a Quantum Computer?



# Motivation.

## The Question.

Why should we have a Quantum Computer?



# Electronic Structure in a Fixed Basis is QMA-complete

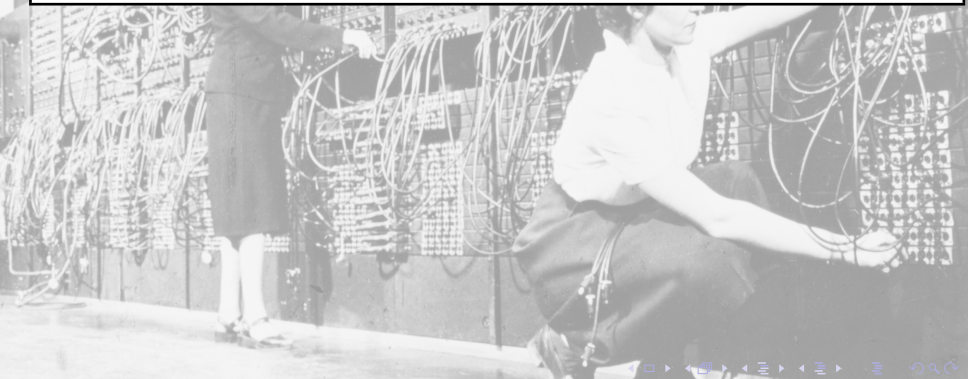
Bryan O'Gorman\*

Sandy Irani<sup>†</sup>

James Whitfield\*\*

Bill Fefferman<sup>‡</sup>

March 16, 2021



# Electronic Structure in a Fixed Basis is QMA-complete

Bryan O'Gorman\*

Sandy Irani<sup>†</sup>

James Whitfield\*\*

Bill Fefferman<sup>‡</sup>

March 16, 2021

# Asymptotically Good Quantum and Locally Testable Classical LDPC Codes

Pavel Panteleev and Gleb Kalachev\*

January 24, 2022

# About this Presentation.

Contents of first  
column  
split into two  
lines

Contents of first  
column  
split into two  
lines

Contents of first  
column  
split into two  
lines

Contents of first  
column  
split into two  
lines

# Sounds Grate, Whats is the catch?

here you can put any text/equation etc.  $a^2 + b^2 = c^2$ .

# Wait a minute.

here you can put any text/equation etc.  $a^2 + b^2 = c^2$ .



# This is the second slide

A bit more information about this

Some random text.