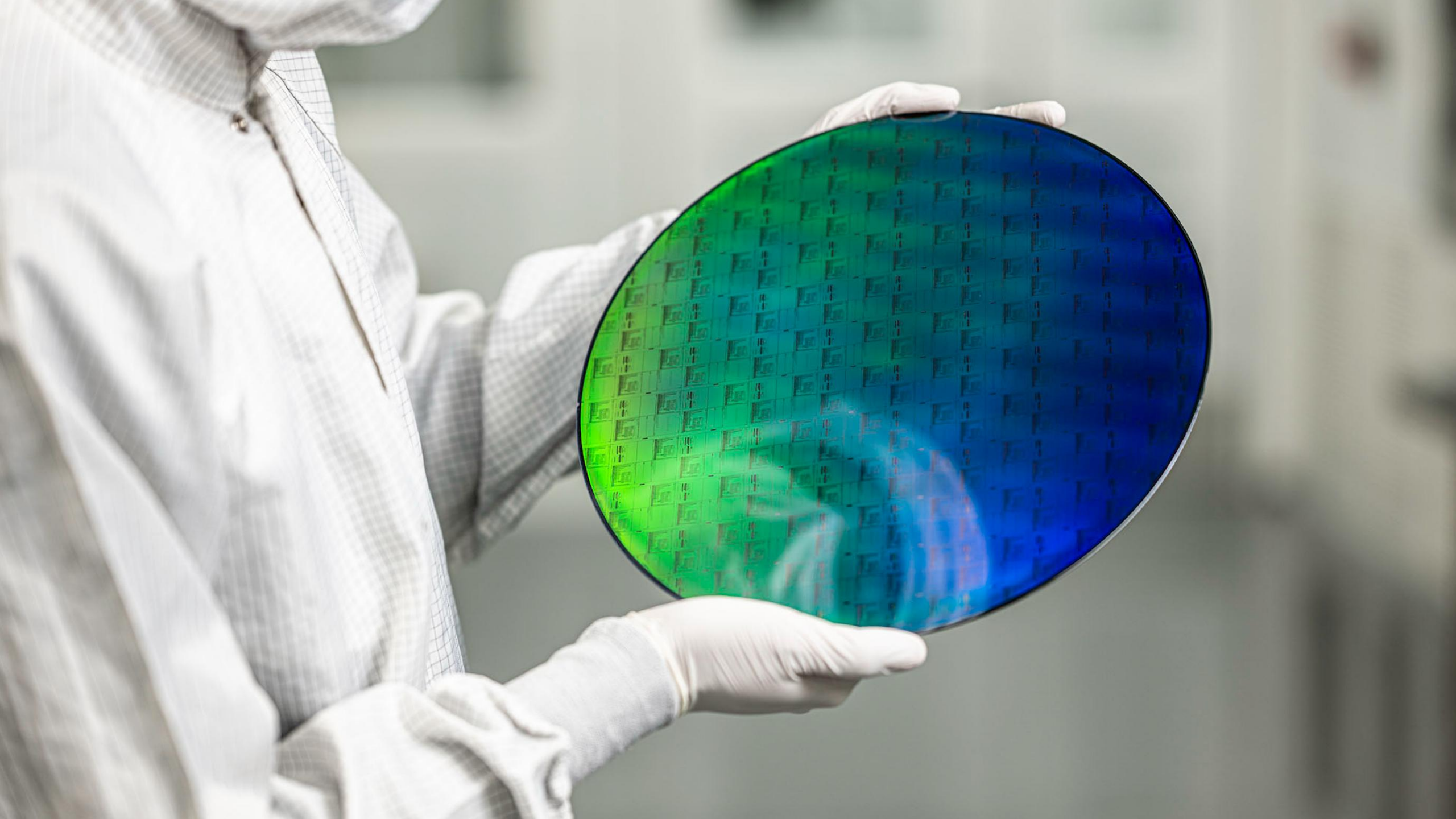

PsiQuantum


Construct

PsiQuantum is a quantum computing company on a mission to build and deploy the world's first useful quantum computers.

This is what we'll be talking about today!

# PsiQuantum is a scary place to work at



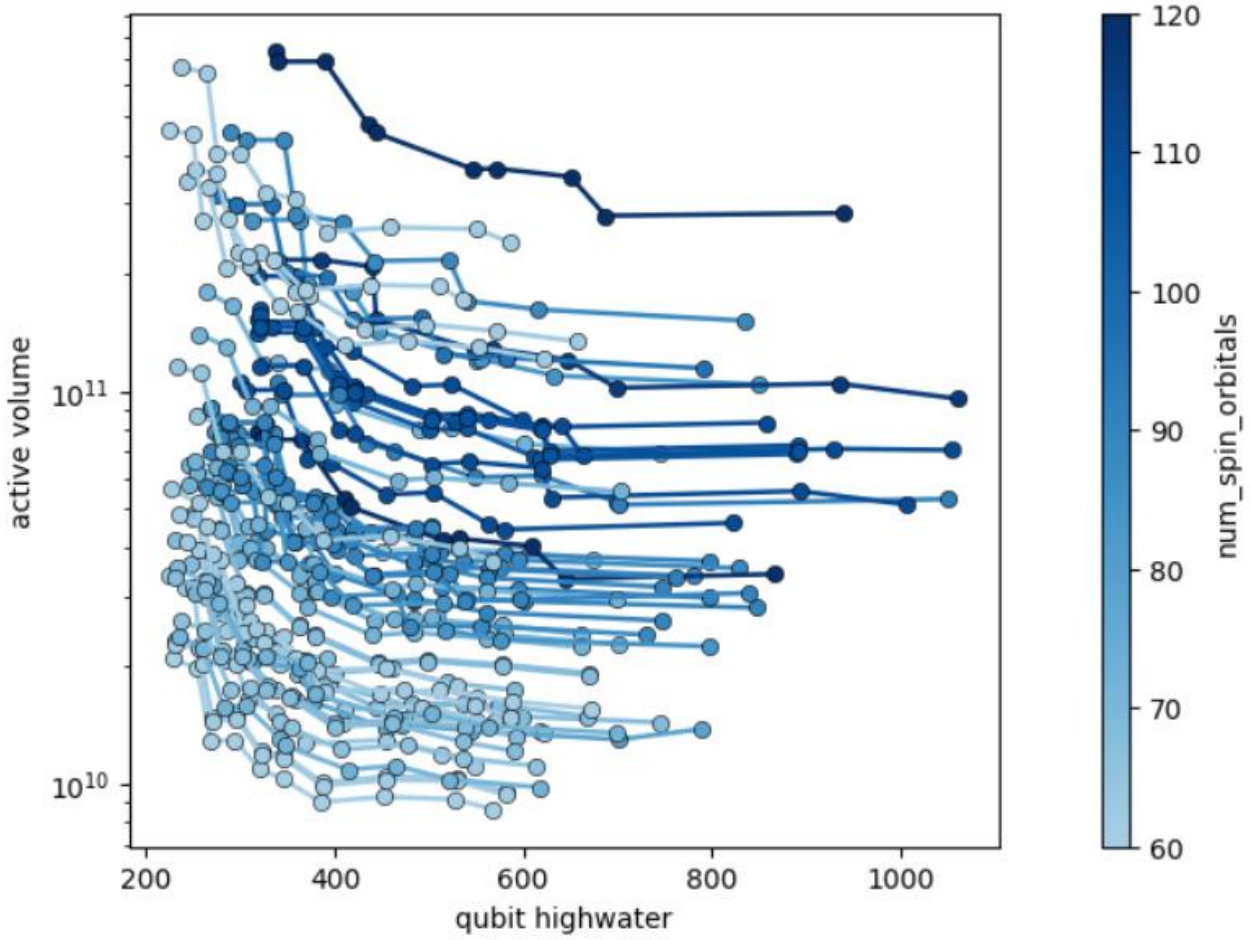

Quantum Hardware
Useful applications

# Our Development Tools Accelerate Use Case Optimization

| | | | PsiQ Tools |
|---|---|---|---|
|  | **Algorithm Down Selection** | Weeks → | **Days** |
|  | **Algorithm Instantiation** | Months → | **Days** |
|  | **Compilation** | Months → | **Days** |
|  | **Resource Estimation** | Weeks → | **Minutes** |
|  | **Optimization** | Months → | **Weeks** |

# Fast quantum simulation of electronic structure by spectrum amplification

Guang Hao Low,[1,*] Robbie King,[1,2] Dominic W. Berry,[3] Qiushi Han,[4] A. Eugene DePrince III,[1,5] Alec White,[6] Ryan Babbush,[1] Rolando D. Somma,[1] and Nicholas C. Rubin[1,†]




https://arxiv.org/abs/2502.15882 https://github.com/isi-usc-edu/qb-gsee-benchmark/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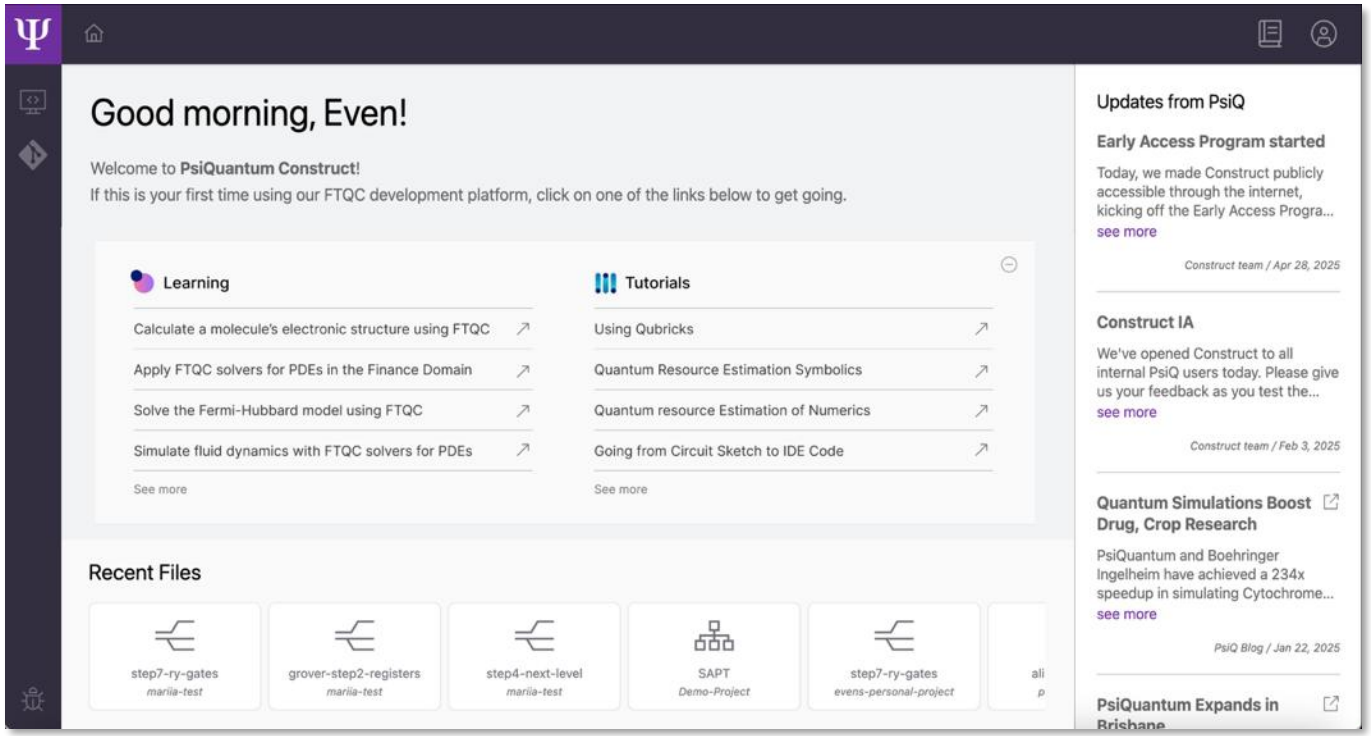
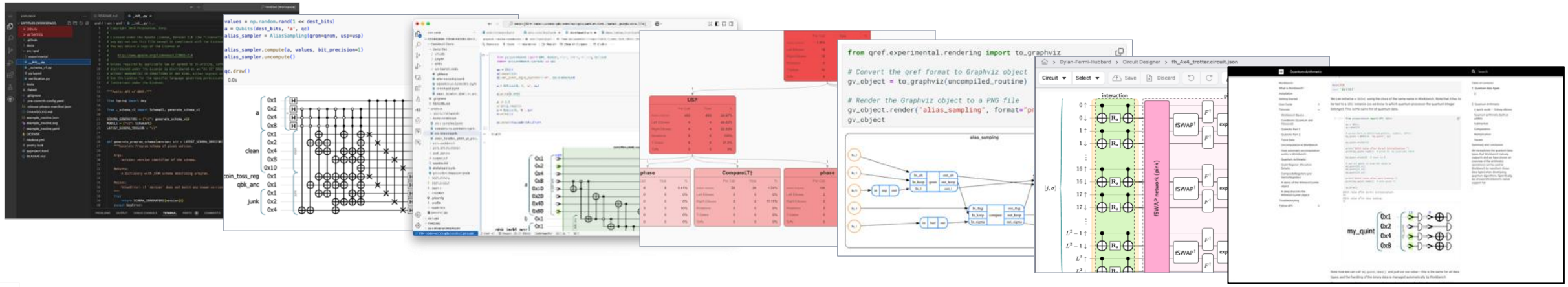
# Introducing

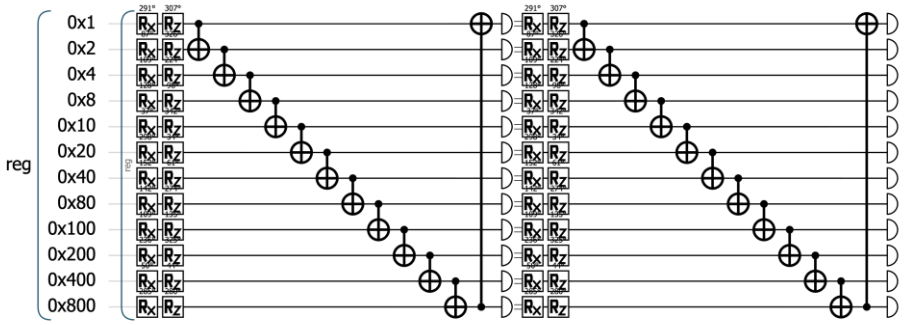
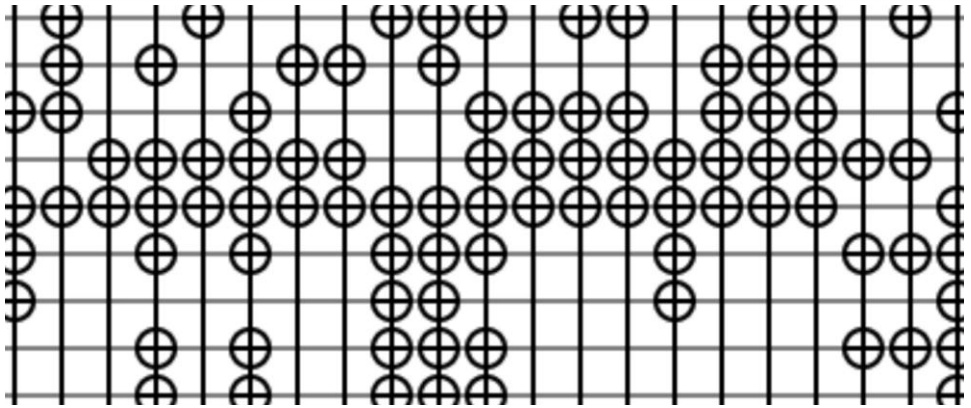
# Introducing Construct™

## Expert-Driven Platform to Develop Fault Tolerant Quantum Applications

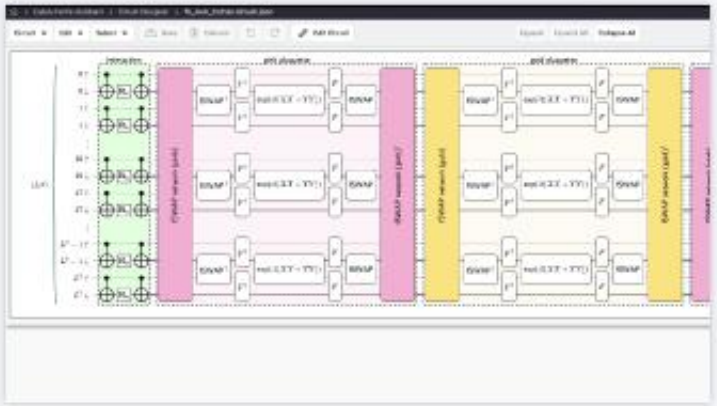


# Fault Tolerant Algorithms are Fundamentally Different

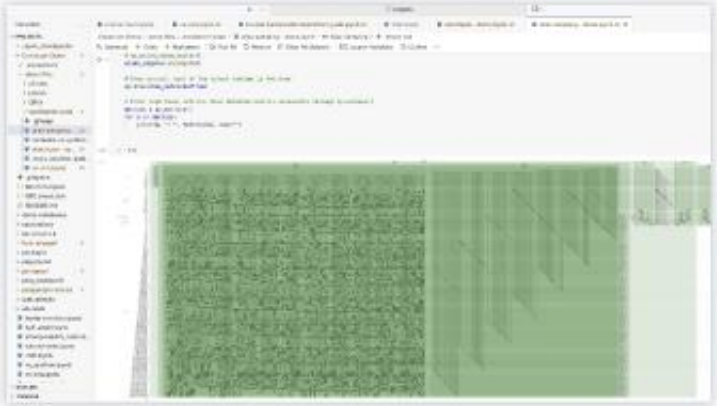
| NISQ Algorithms | | Fault Tolerant Algorithms |
|---|---|---|
|  | |  |
| Hundreds of operations | → | **Billions** of operations |
| Low level programming | → | **High level** abstract programming |
| Focus on error mitigation | → | Focus on **resource optimization** |
| Toy problems | → | **Meaningful** applications |

# Design



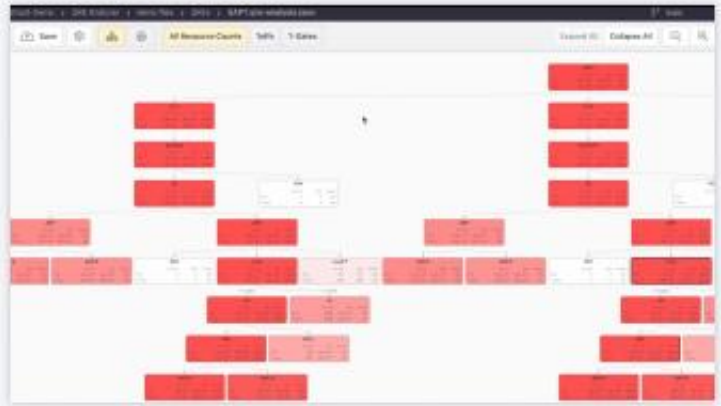
Cd Circuit Designer

# Develop



W Workbench

# Optimize



Ra Resource Analyzer

# Thank you!

To sign-up for construct access:
https://www.psiquantum.com/software#apply

Michał & Konrad's newsletter:
https://www.qse-newsletter.com

PsiQuantum is hiring:
https://www.psiquantum.com/open-roles