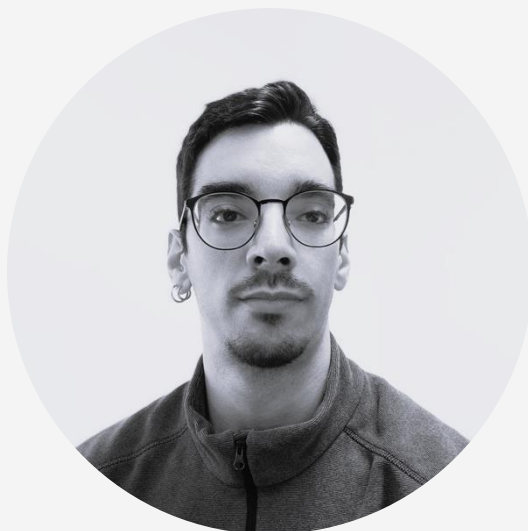


Quantum Radar for Battleship Game

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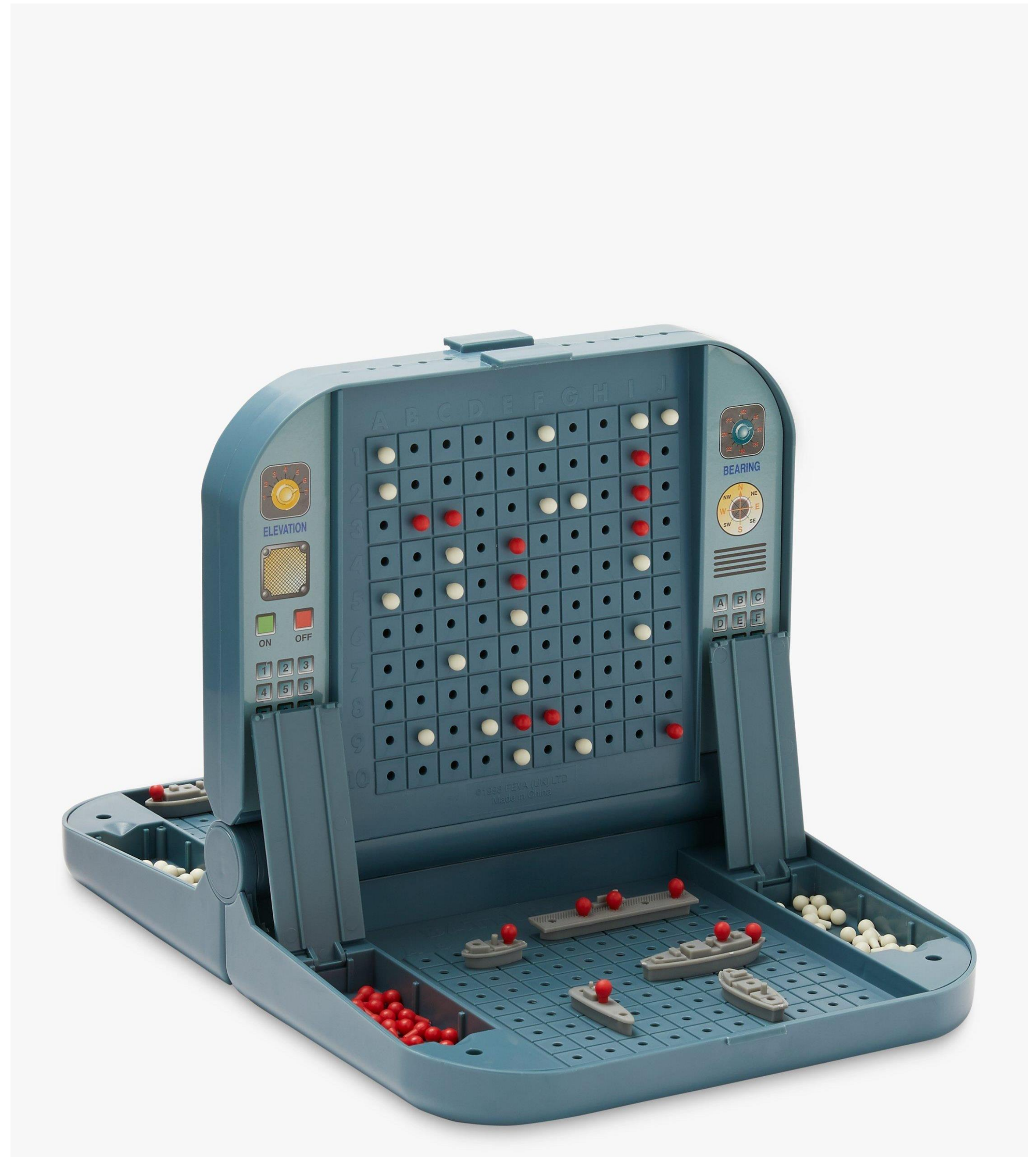


Battleship game

The game of **Battleship** is a two-player strategy game where each player secretly arranges a fleet of ships on a grid (typically 10×10 in size)

Ships vary in length and are placed either horizontally or vertically, without overlapping.

Players take turns calling out grid coordinates (for example, “B7”) to target their opponent’s hidden ships. The opponent responds with “hit” if the chosen square contains part of a ship or “miss” if it does not.



Our goal:
Find all ships with
minimum chance
of hitting them

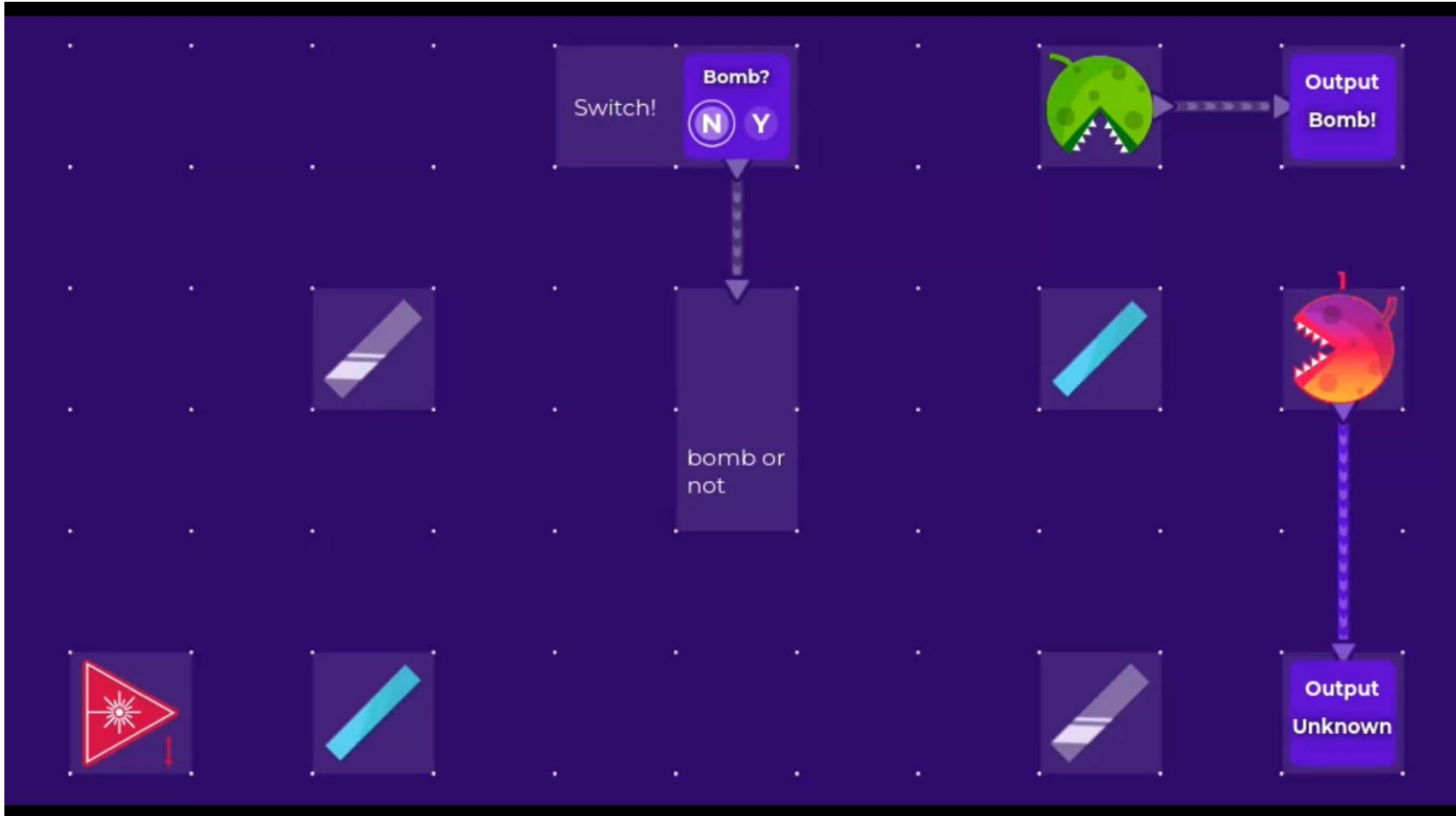
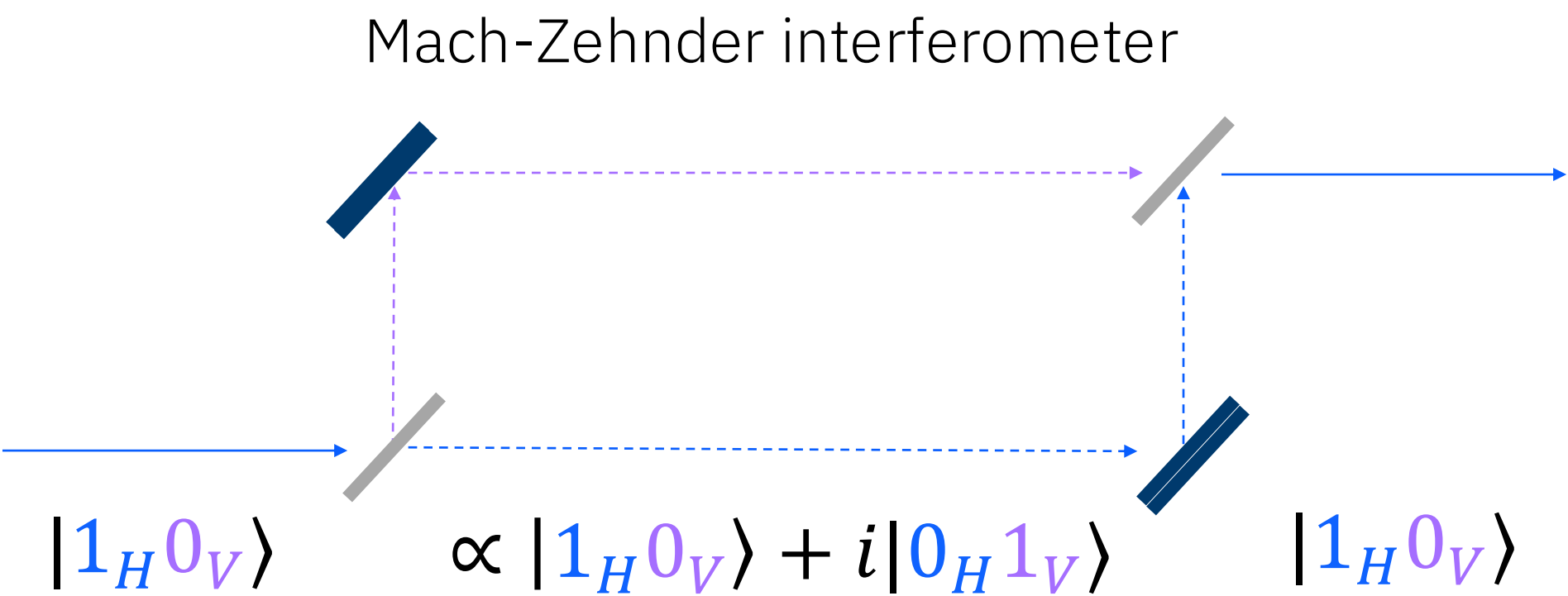


Elitzur-Vaidman interaction-free bomb-tester



Elitzur-Vaidman bomb tester

First proposed in 1993, the Elitzur–Vaidman bomb tester is a landmark thought experiment—later confirmed experimentally—that demonstrates how core principles of quantum physics, such as superposition and entanglement, can be harnessed to perform *interaction-free measurements*.

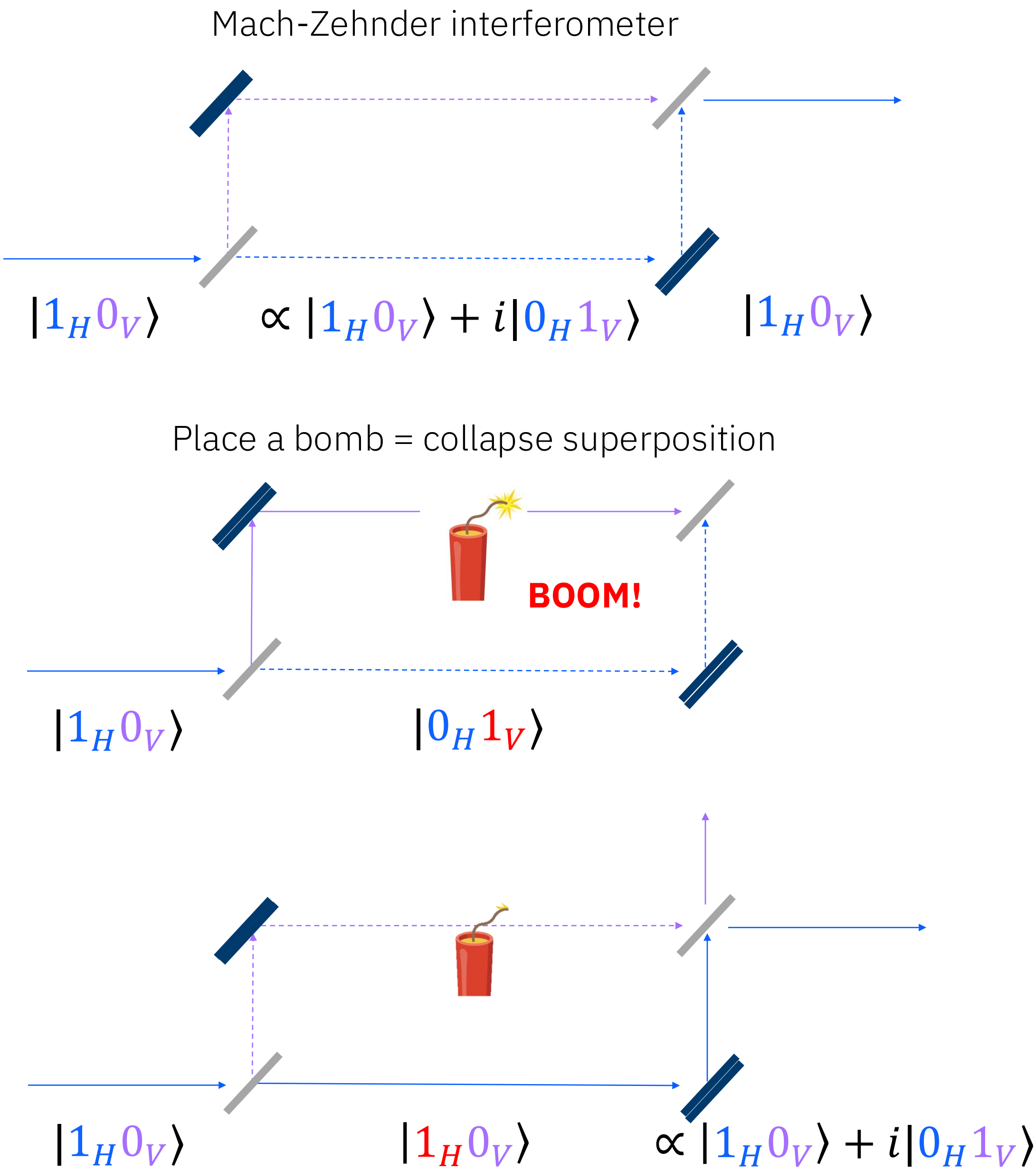


<https://lab.quantumflytrap.com>



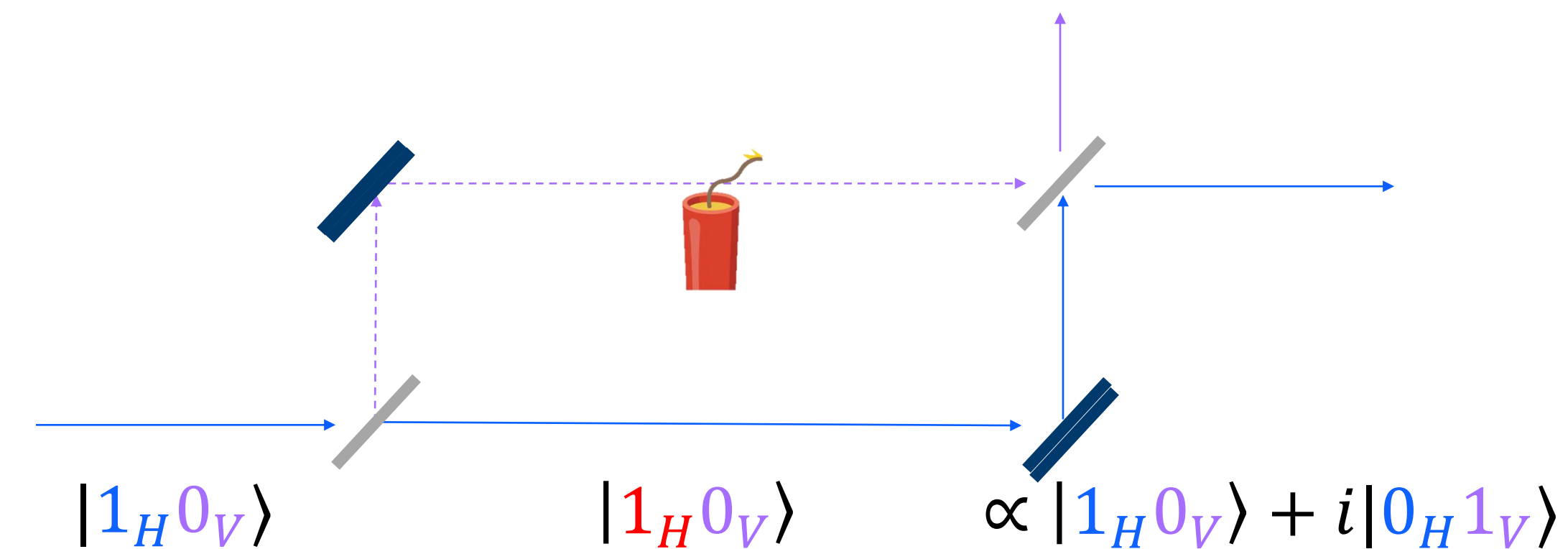
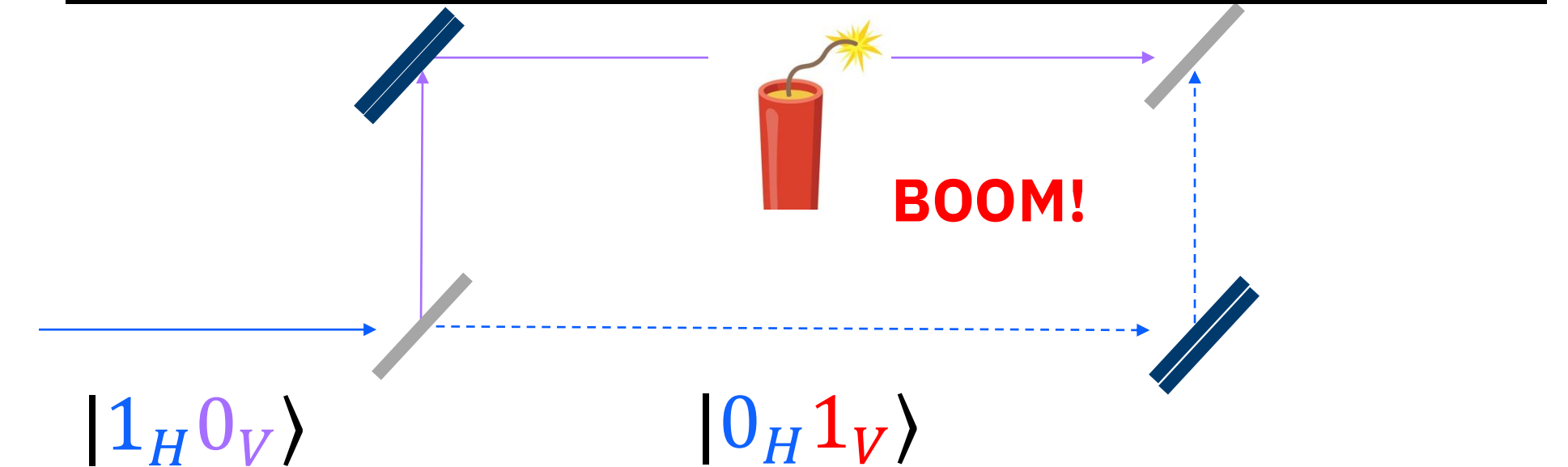
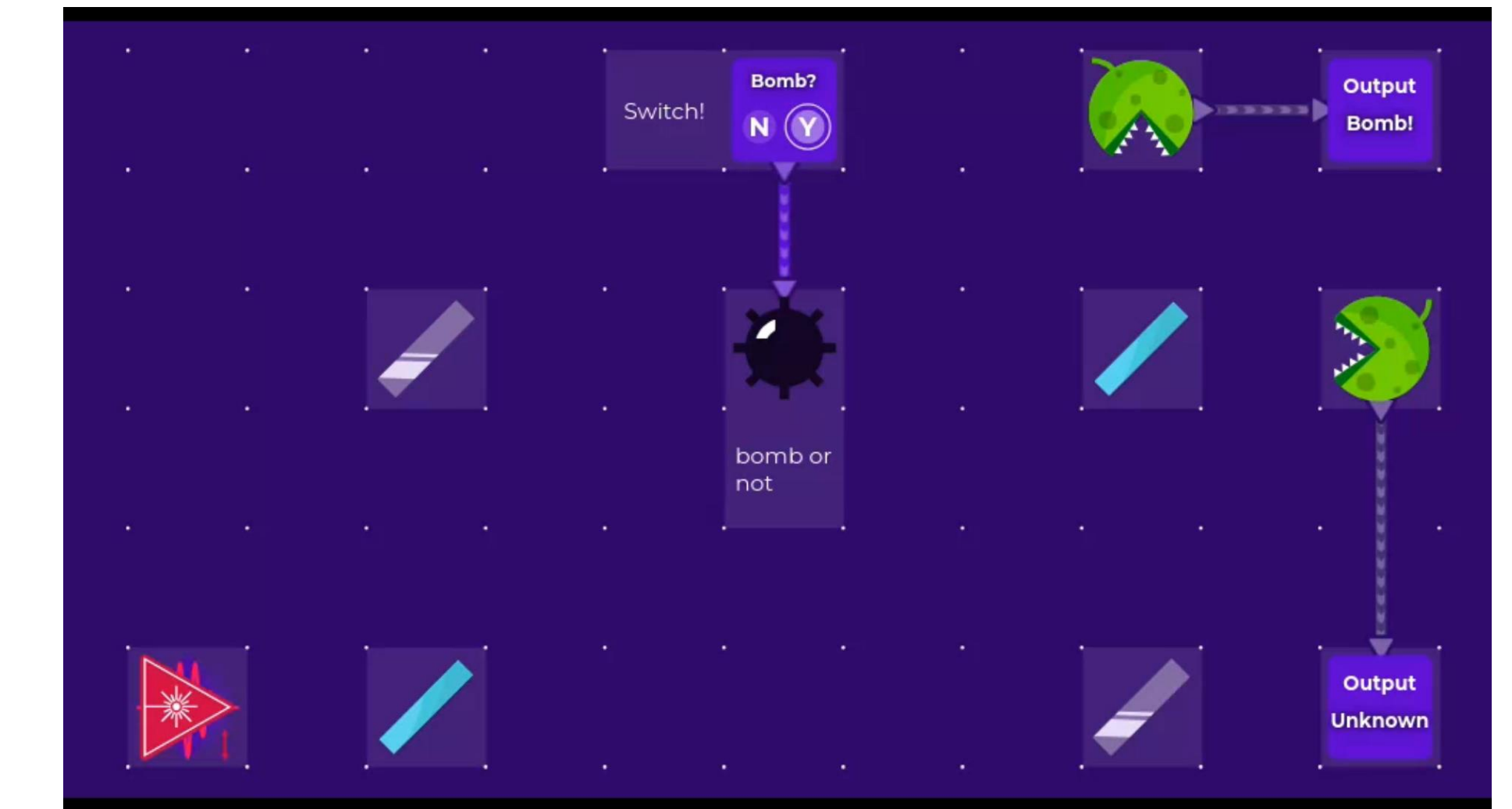
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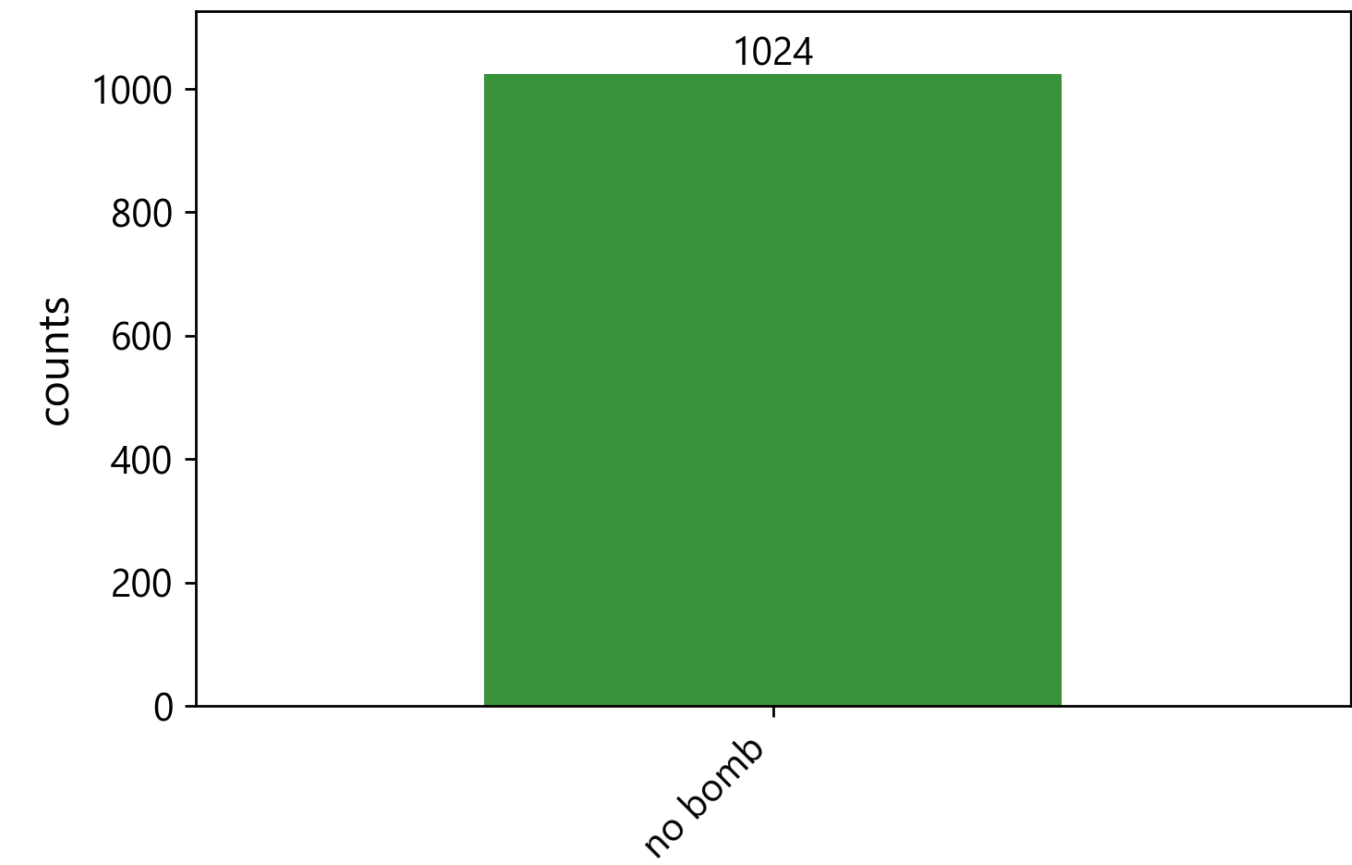
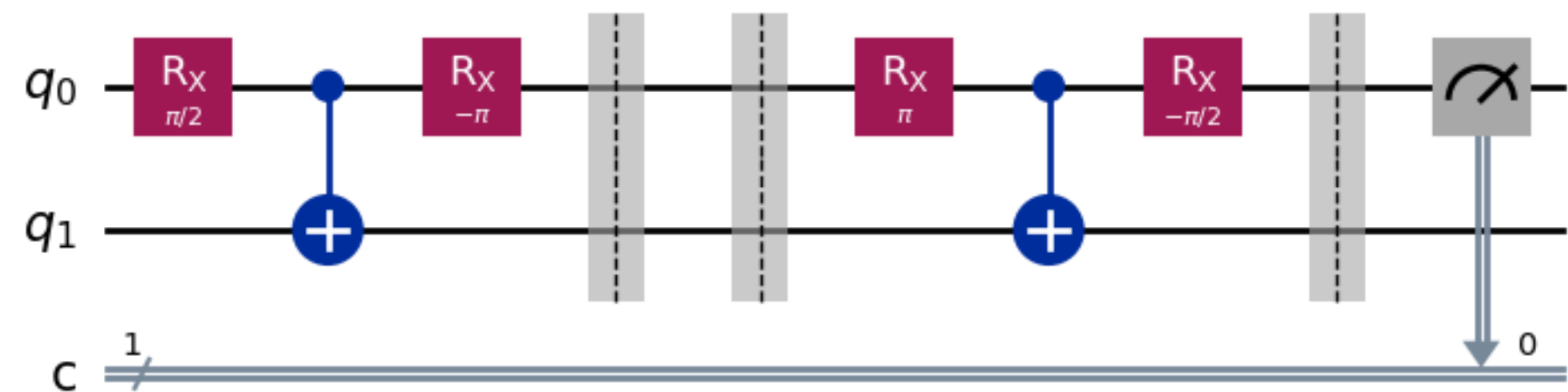
There's a chance
of detecting a
bomb without
hitting it



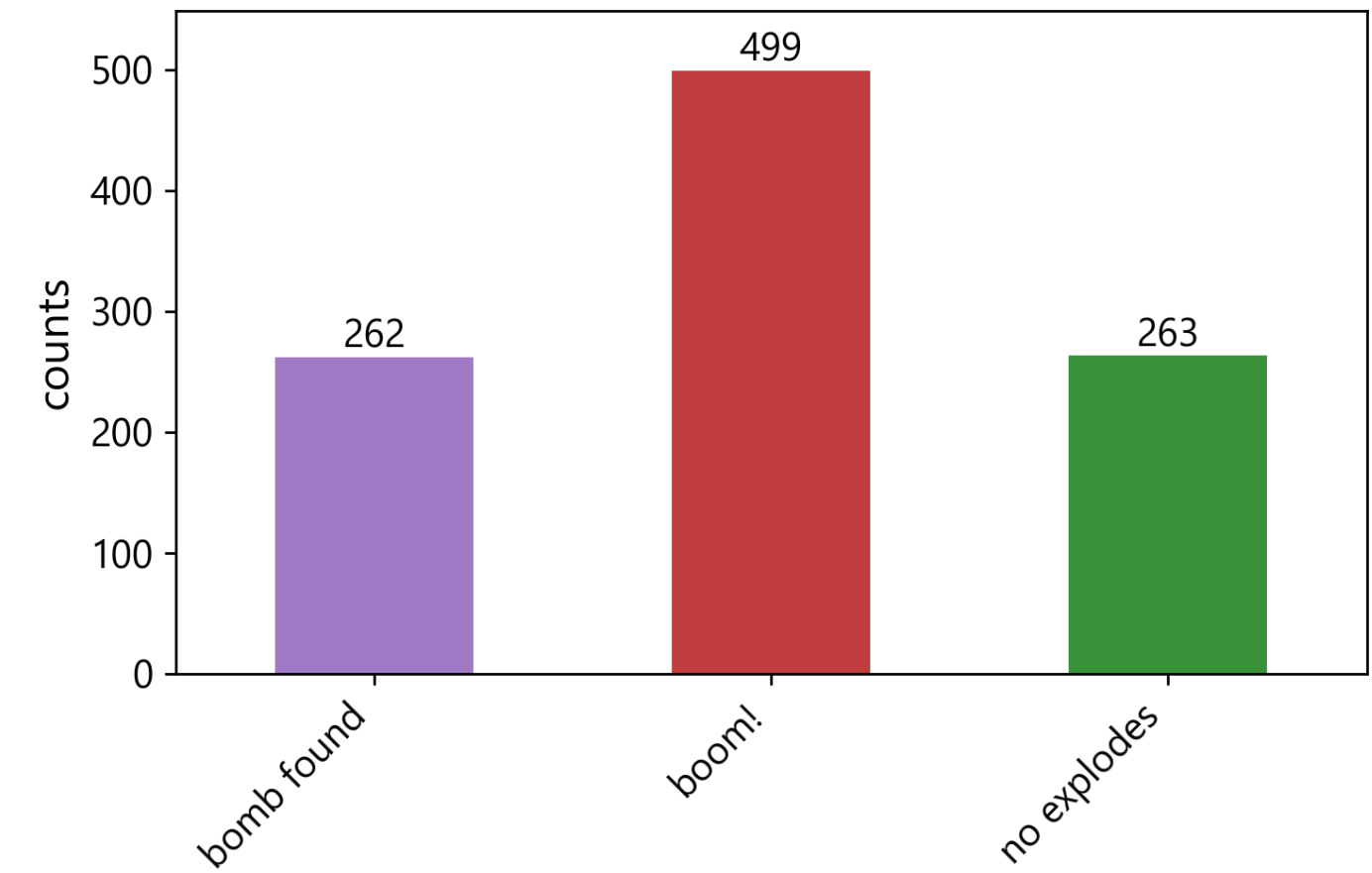
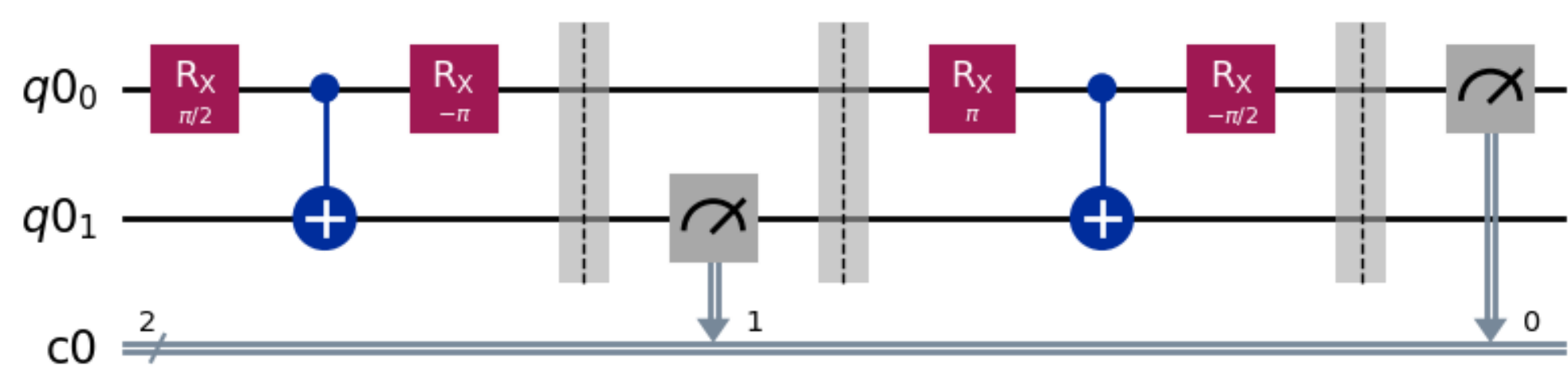
Elitzur Vaidman at Qiskit



Mach-Zehnder interferometer

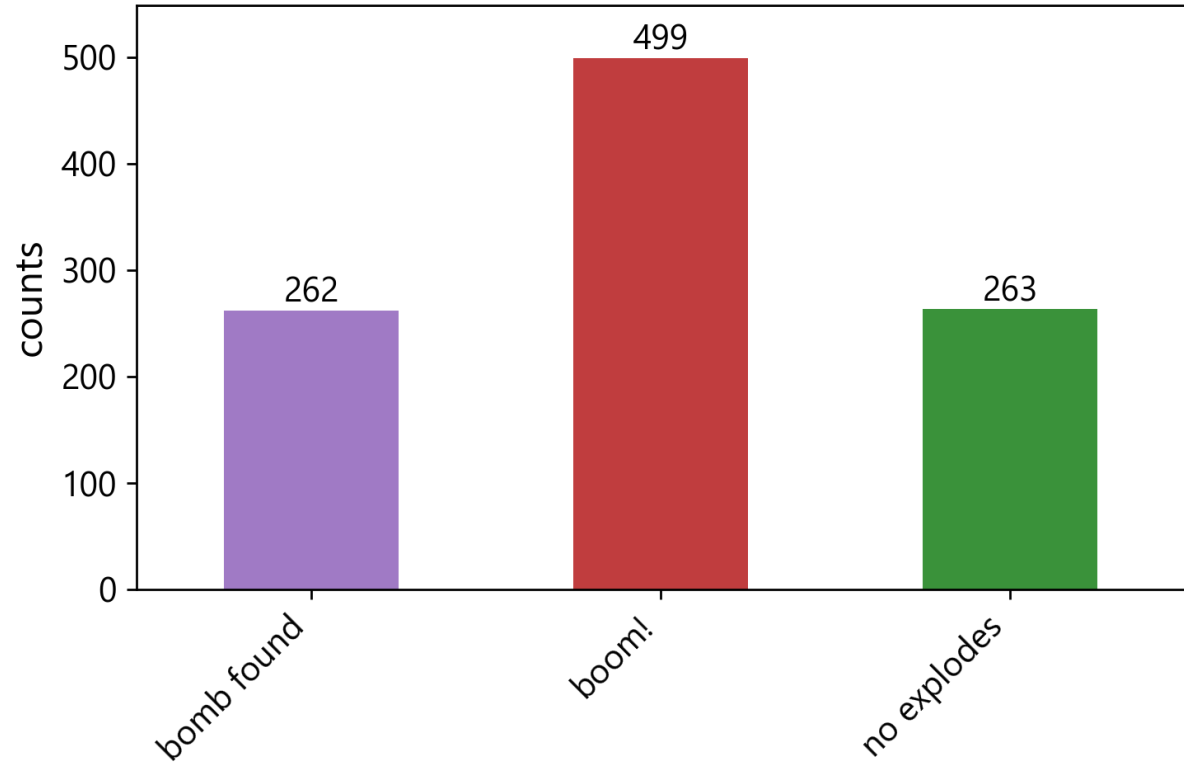
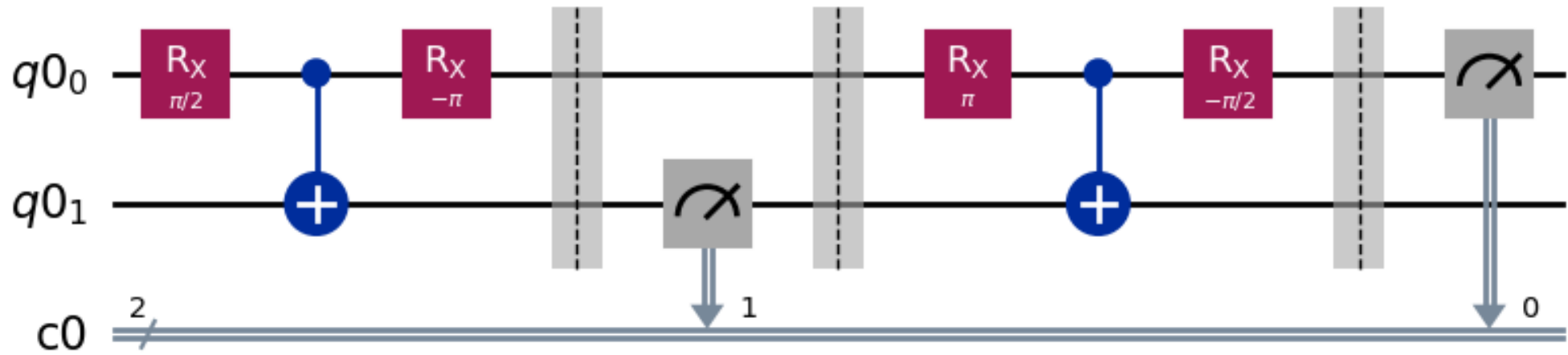


Bomb placement



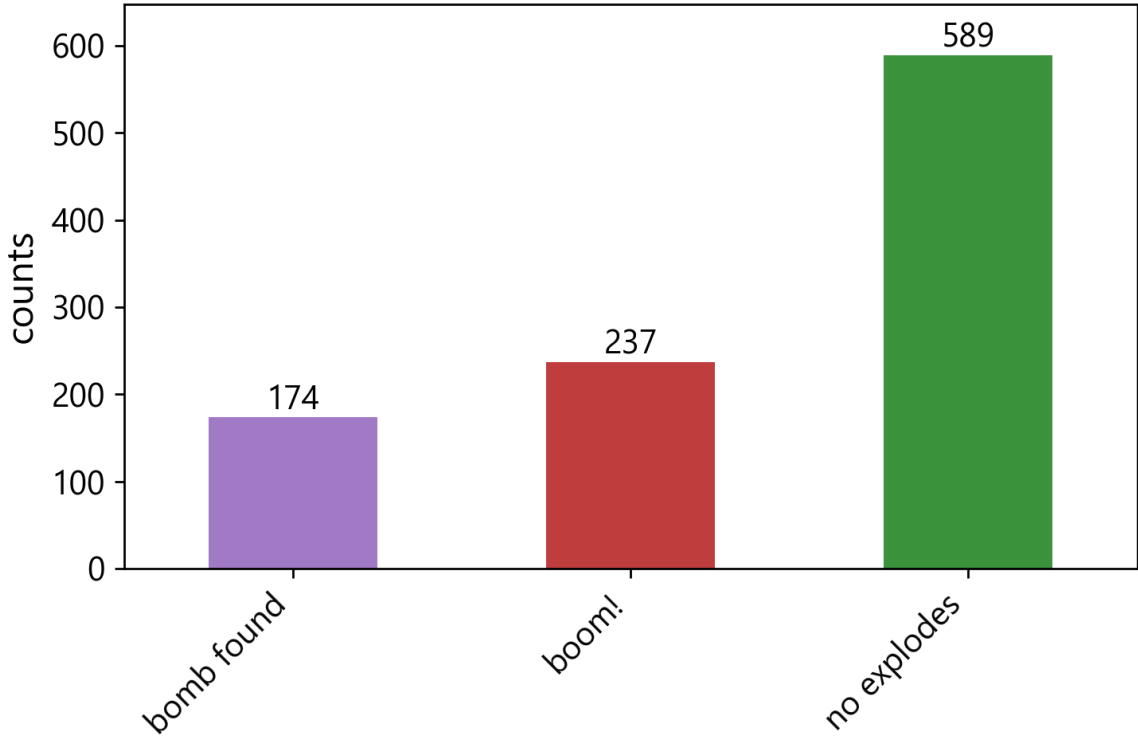
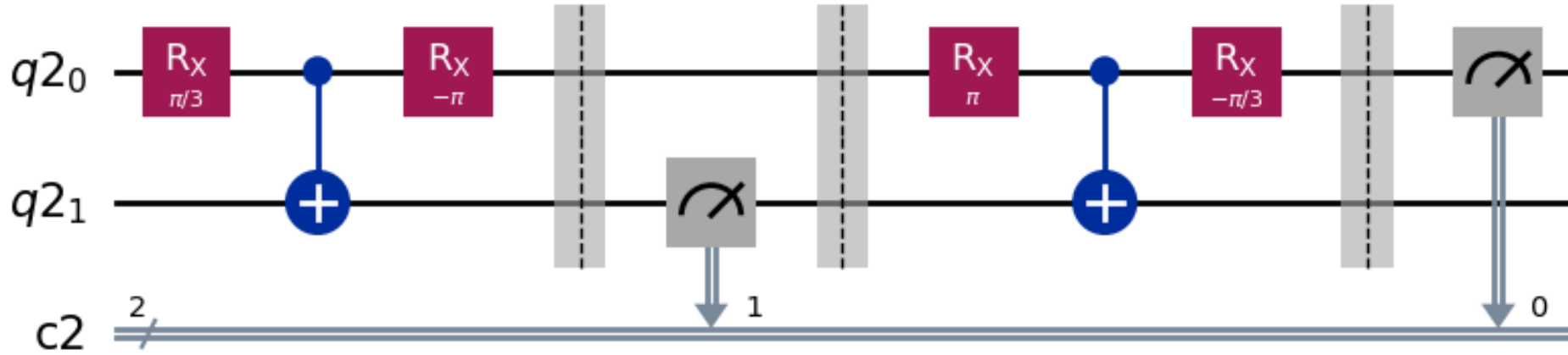
E.V. score = Detection (25%) / Explosion (50%) = 50%

Original experiment



50%

Upgrade by changing angle



75%

Let's play battleship



IBM