

118TH CONGRESS  
1ST SESSION

# S. 969

To amend the National Quantum Initiative Act to make certain additions relating to quantum modeling and simulation, and for other purposes.

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IN THE SENATE OF THE UNITED STATES

MARCH 23, 2023

Mr. YOUNG (for himself and Mr. WARNOCK) introduced the following bill; which was read twice and referred to the Committee on Commerce, Science, and Transportation

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## A BILL

To amend the National Quantum Initiative Act to make certain additions relating to quantum modeling and simulation, and for other purposes.

1 *Be it enacted by the Senate and House of Representa-*  
2 *tives of the United States of America in Congress assembled,*

3 **SECTION 1. SHORT TITLE.**

4 This Act may be cited as the “Quantum in Practice  
5 Act”.

6 **SEC. 2. FINDINGS.**

7 Congress finds the following:

1           (1) Quantum computing has the potential to  
2 spur advancements in molecular modeling and sim-  
3 ulation that will benefit people in the United States.

4           (2) Quantum molecular simulations and mod-  
5 eling will enable scientists to study chemical ele-  
6 ments and reactions with accuracy and speed that is  
7 far beyond the abilities of existing supercomputers.

8           (3) Advances in molecular simulations and  
9 modeling would give researchers tools that could  
10 lead to breakthroughs across industries and sectors,  
11 including—

12                   (A) modeling the nitrogen fixation process  
13 utilized by bacteria, which could be used to de-  
14 velop synthetic fertilizers without the high en-  
15 ergy and material costs of current methods, cre-  
16 ating the next generation of fertilizers;

17                   (B) creating more effective medications  
18 and reducing harmful interactions or side ef-  
19 fects;

20                   (C) developing new materials to increase  
21 energy storage capacity and create more power-  
22 ful battery technologies;

23                   (D) developing lighter, stronger metals;

1                   (E) creating materials for more durable  
2                   protective gear for law enforcement and mili-  
3                   tary; and

4                   (F) developing new types of super-  
5                   conductors.

6 **SEC. 3. QUANTUM MODELING AND SIMULATION.**

7           (a) DEFINITION OF QUANTUM INFORMATION  
8 SCIENCE.—Section 2(6) of the National Quantum Initia-  
9 tive Act (15 U.S.C. 8801(6)) is amended by inserting  
10 “modeling, simulation,” after “computing,”.

11           (b) QUANTUM INFORMATION SCIENCE RESEARCH  
12 PROGRAM.—Section 401(b)(3) of such Act (15 U.S.C.  
13 8851(b)(3)) is amended—

14                   (1) in subparagraph (F), by striking “; and”  
15                   and inserting a semicolon;

16                   (2) in subparagraph (G), by striking the semi-  
17                   colon and inserting “; and”; and

18                   (3) by adding at the end the following:

19                           “(H) quantum molecular modeling or sim-  
20                           ulation;”.

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