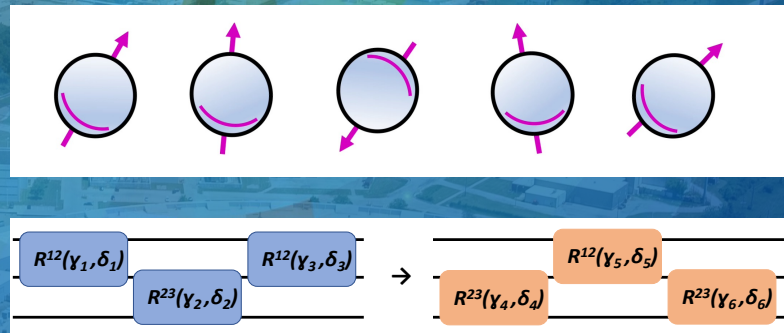


APRIL 17, 2024

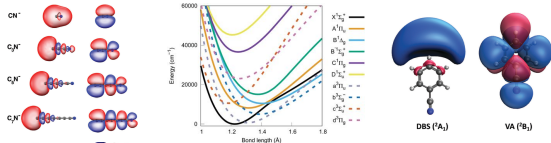
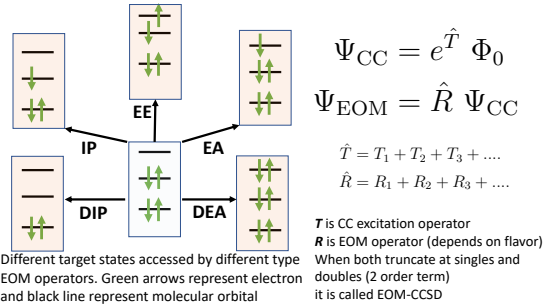
QUANTUM COMPUTING IN CELS/PSE (NO- HARDWARE)

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Post Doctoral Scholar
CPS

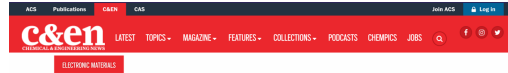
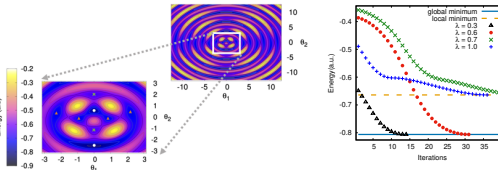
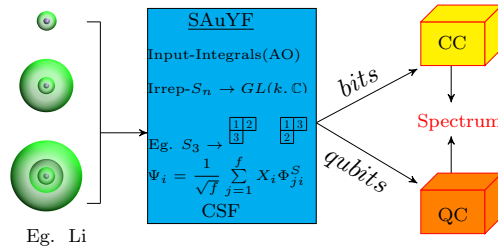


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Background



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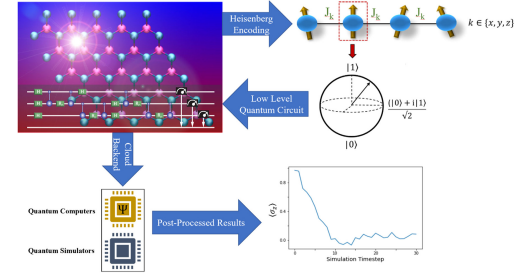
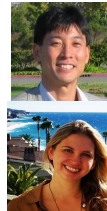


Table 1. Electronic structure for sp^2 and sp^3 systems found in YFM circuit.

No.	Chemical Code Set in YFM Circuit	Equivalent
1	$RZ(\theta)$	$RZ(\theta)$
2	$RZ(\theta)$	$RZ(\theta)$
3	$RZ(\theta)$	$RZ(\theta)$
4	$RZ(\theta)$	$RZ(\theta)$
5	$RZ(\theta)$	$RZ(\theta)$
6	$RZ(\theta)$	$RZ(\theta)$
7	$RZ(\theta)$	$RZ(\theta)$
8	$RZ(\theta)$	$RZ(\theta)$
9	$RZ(\theta)$	$RZ(\theta)$
10	$RZ(\theta)$	$RZ(\theta)$
11	$RZ(\theta)$	$RZ(\theta)$



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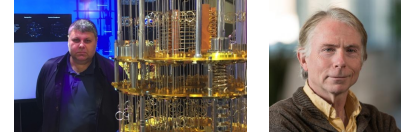
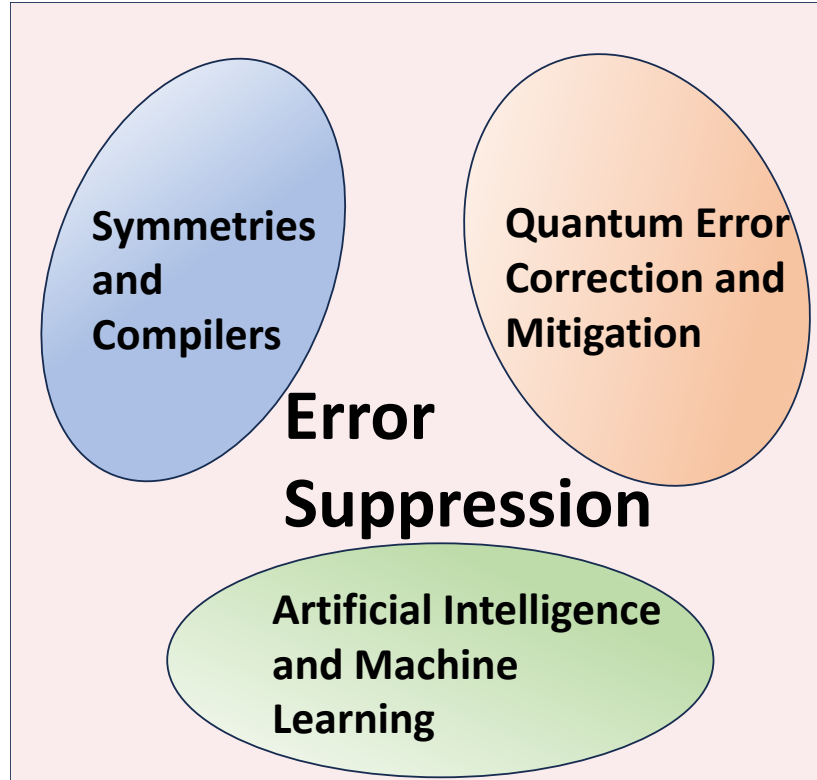
Current Work

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Hybrid algorithm for the time-dependent Hartree-Fock method using the Yang-Baxter equation on quantum computers, 2023 (accepted *Elec. Struct.*)

Quantum error mitigation and correction mediated by Yang-Baxter equation and artificial neural network, 2024 (submitted to *Phys. Rev. A*)



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Collaboration Interests

- Large scale quantum simulation
- Quantum Compilation
- Machine Learning
- Quantum Material Design
- Quantum Benchmarking



Argonne



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