Tab 1

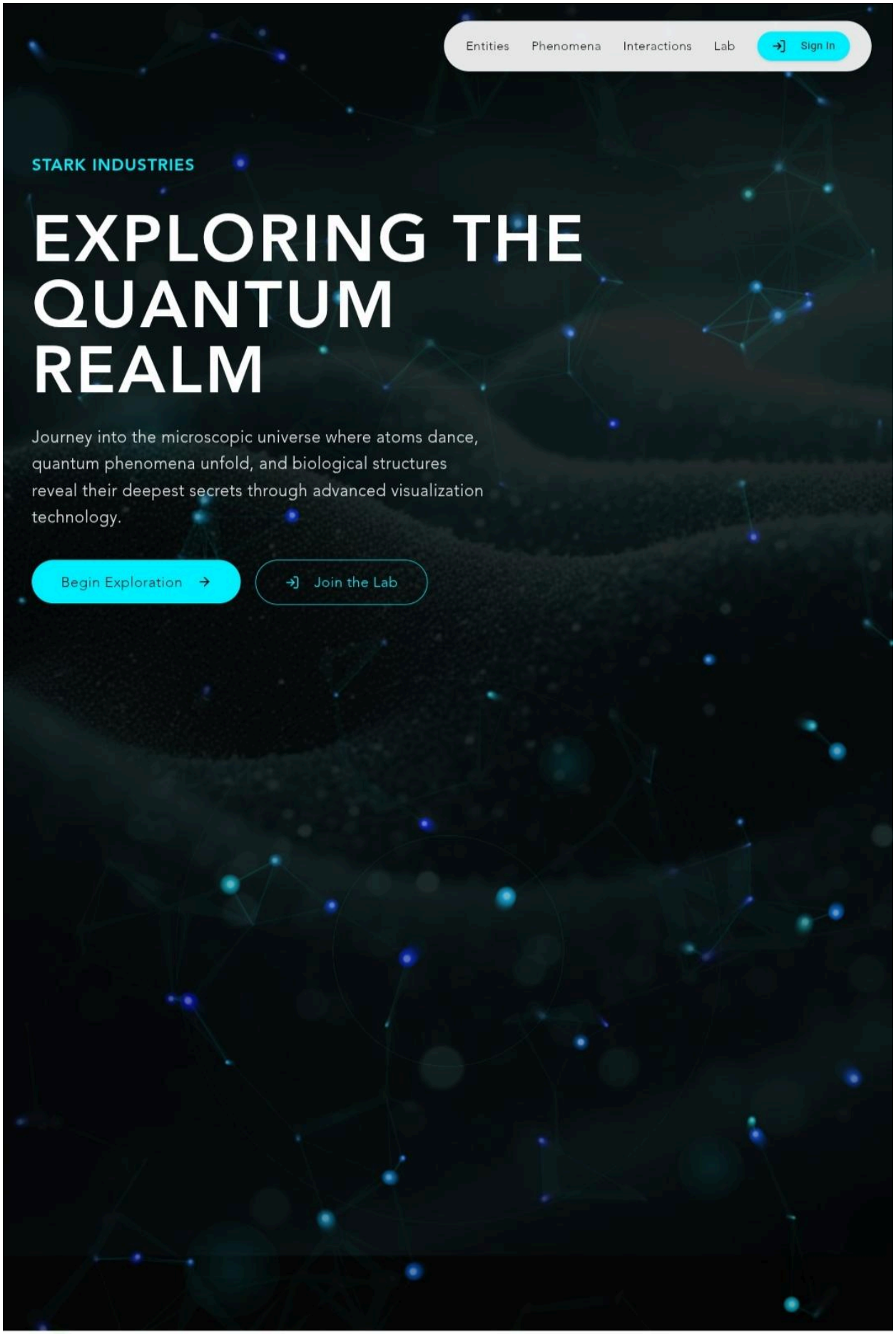
Project report :-https://7ggcqm-my-site-9sophg71-mallagangulynookam.wix-vibe.com/

Title:-Quantum Physics and Mechanics

Name of the innovator:-Malla Ganguly
Nookambika Venkat

Starting date : 17/11/2025
Ending date : 19/11/2025

Project screenshot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Quantum Phenomena

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Fundamental Quantum Mechanics

1924

Wave-Particle Duality

The fundamental concept that all particles exhibit both wave and particle properties. For example, a photon can behave as a wave when propagating and as a particle when...

KEY CHARACTERISTICS

Dual nature of matter and energy; observed in photons and electrons; central to quantum theory.

Explore Phenomenon

Quantum Information

1935

Quantum Entanglement

A phenomenon where two or more particles become linked in such a way that they share the same quantum state, regardless of the distance separating them. Measuring the...

KEY CHARACTERISTICS

Non-local correlation; instantaneous influence; basis for quantum computing and cryptography.

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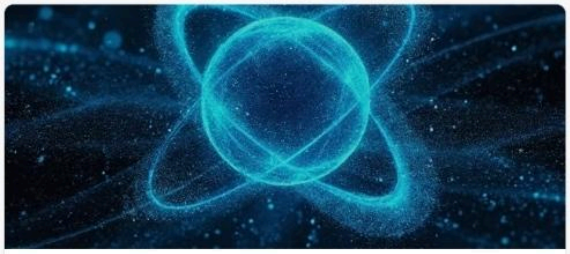


Fundamental Quantum Mechanics

1926

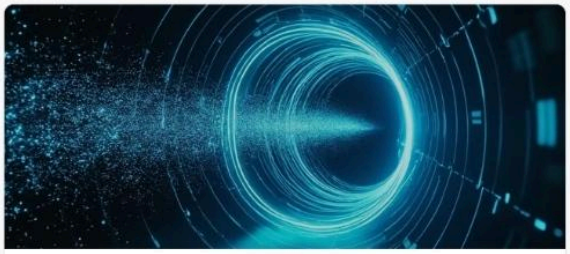
Quantum Superposition

The principle that a quantum system can exist in multiple states simultaneously until it is measured. Upon measurement, the system collapses into a single, definite...

KEY CHARACTERISTICS

Multiple states at once; collapse upon measurement; probabilistic outcomes.

Explore Phenomenon



Quantum Dynamics

1927

Quantum Tunneling

A quantum mechanical phenomenon where a particle can pass through a potential energy barrier, even if it does not have enough classical energy to overcome it. This is due t...

KEY CHARACTERISTICS

Barrier penetration; probability-driven; crucial in nuclear fusion and scanning tunneling microscopy.

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Project Description:

1. **Scale and Domain** – The quantum realm operates at atomic and subatomic scales (atoms, electrons, photons, quarks), where classical physics no longer applies.

2. **Wave-Particle Duality** – Particles can behave like both particles and waves, meaning they can exist in multiple states simultaneously until measured.

3. **Superposition and Entanglement** – Objects can be in a superposition of states, and entangled particles remain instantaneously correlated regardless of distance.

4. **Uncertainty Principle** – Heisenberg's principle dictates limits on simultaneously knowing certain properties, like position and momentum, introducing inherent unpredictability.

5. **Quantum Tunneling and Probabilities** – Particles can "tunnel" through barriers and outcomes are fundamentally probabilistic, not deterministic.

THANK YOU MAGIC BUS AND IBM FOR GIVING THIS OPPORTUNITY TO DOING THIS PROJECT

EXPLORING THE QUANTUM REALM

Tab 2