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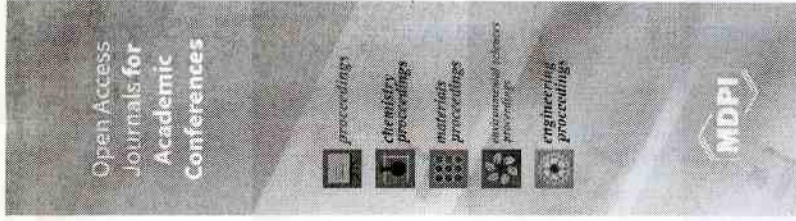
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Quantum Genetic Terrain Algorithm (Q-GTA): A Technique to Study the Evolution of the Earth Using Quantum Genetic Algorithm †

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Quantum Genetic Terrain Algorithm (Q-GTA): A Technique to Study the Evolution of the Earth Using Quantum Genetic Algorithm †

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Abstract: In recent years, geologists have put in a lot of effort trying to study the evolution of Earth using different techniques studying rocks, gases, and water at different channels like mantle, lithosphere, and atmosphere. Some of the methods include estimation of heat flux between the atmosphere and sea ice, modeling global temperature changes, and groundwater monitoring networks. That being said, algorithms involving the study of Earth's evolution have been a debated topic for decades. In addition, there is distinct research on the mantle, lithosphere, and atmosphere using isotopic fractionation, which this paper will take into consideration to form genes at the former stage. This factor of isotopic fractionation could be molded in QGA to study the Earth's evolution. We combined these factors because the gases containing these isotopes move from mantle to lithosphere or atmosphere through gaps or volcanic eruptions contributing to it. We are likely to use the Rb/Sr and Sm/Nd ratios to study the evolution of these channels. This paper, in general, provides the idea of gathering some information about temperature changes by using isotopic ratios as chromosomes, in QGA the chromosomes depict the characteristic of a generation. Here these ratios depict the temperature characteristic and other steps of QGA would be molded to study these ratios in the form of temperature changes, which would further signify the evolution of Earth based on the study that temperature changes with the change in isotopic ratios. This paper will collect these distinct studies and embed them into an upgraded quantum genetic algorithm called Quantum Genetic Terrain Algorithm or Quantum GTA.

Keywords: quantum genetic algorithm; isotopic fractionation

1. Introduction

The evolution of human beings has been a long-studied material and though regular changes have been taking place in the study, still the technology to determine the complexity of human genetics does not fulfill the desires of humans to know it properly. After the use of the genetic algorithm that works on Charles Darwin's theory of survival of the fittest, unbelievable results were found. This algorithm not only helped provide a better understanding of the previously founded diseases but also helped find new diseases. The great work of John Holland had flagged across the globe in distinct forms from making new medicines to determining exact genetic disorders in patients.