

## Travelling waves in inhomogeneous DNA system using Sine-Gordon equation

*Thursday, 28 September 2023 09:30 (30 minutes)*

An impulse function which is as a result of an external factor was considered as a complex dynamic system which has a nonlinear perturbations on the DNA system. This is used to describe the distortion that occurs within the DNA system. In describing the internal dynamics, mathematical model known as the sine-Gordon equations was employed. The equation describes angular oscillations of nitrous bases of the chain. The sine-Gordon model was modified to depict the dynamics of the double helix of a DNA system. The proposed model was based on the inhomogeneities that exist in the base sequence of the DNA structure. Various works that has been done in similar areas were discussed as well as the method that was used. The effect of dissipation on the DNA was considered. Computer simulations were performed on the model to see the distortions that occurs in the DNA system

**Primary author:** Mr OPOKU OHEMENG, Mordecai (KNUST)

**Co-authors:** Prof. ACKORA-PRAH, Joseph; Dr BARNES, Benedict (KNUST); Dr TAKYI, Ishmael

**Presenter:** Mr OPOKU OHEMENG, Mordecai (KNUST)

**Session Classification:** Mathematical Biology

**Track Classification:** Mathematical Biology