

## Letters of Interest Submission



Contribution ID: 25

Type: **not specified**

# African Theoretical Physics Flagship Letter of Intent

The nanoribbons of two dimensional materials such as graphene has been verified theoretically and experimentally to be a good source of acoustoelectric current. This has specific applications in acoustic wave filter as tunable gate-controlled quantum information devices and phonon spectrometers as well as in the development of sound batteries. This has prompted the necessity to investigate other nanoribbons as such silicene, germanene, black phosphorene and many others. In view of this, we propose setting up an African center that can collaborate using theoretical, experimental and computational means to understand the materials properties of all known nanoribbons. This borders on the use of fundamental and applied physics in relation to acoustoelectric effect (AE), acoustomagnetolectric effect (AME) acoustothermal effect (ATE) and acoustomagneto thermal effect (ATME) in Nanoribbons. Other materials such as Carbon nanotubes, Quantum dots/ Wells and graphene superlattices are also of intense interest. We further propose investigating what happens when the nanoribbons are used to form heterostructures. Since it is predicted that due to weak Van der waals forces, their heterostructures will be a good source of Gunn diodes.

### Primary Category

Condensed Matter & Materials Physics

### Secondary Category

Particle Physics

### Subgroup categories

MaterialsPhysics—Advanced 2D materials

### Did you / will you submit this LOI to another category?

NO

### Additional Information

Nil

**Primary authors:** DOMPREH, Kwadwo; Prof. SAMUEL , Yeboah (University of Cape Coast )