GIREP-EPEC
3–7 July 2023
Košice, Slovakia

GIREP-EPEC conference 2023
Physics learning promoting culture
and addressing societal issues

Contribution ID: **86**   Type: **Oral presentation**

Implementing quantum cryptography protocols using MACROBITS

Thursday 6 July 2023 14:00 (20 minutes)

One amazing characteristics of quantum algorithms is how they can deliver results with 100% certainty despite their structure being based on the probabilistic interpretation of quantum mechanics. This type of algorithm requires a different way of thinking and sets a challenge for science educators. Two routines to emulate quantum cryptography protocols (BB84 and EK91) are proposed in this work. The educational procedure uses a tool we have developed and called MACROBIT as a mean to mimic algorithms of quantum key distribution. The MACROBITS are useful to illustrate quantum mechanics concepts such as superposition, change of basis, quantum measurements and entanglement.

How would you like to present your contribution?

Live in Košice (time slot to be allotted based on the programme)

Target education level (primary)

University education

Target education level (secondary, optional)

Higher-secondary education

Primary author: PEREIRA, Joao (UNIRIO)

Presenter: PEREIRA, Joao (UNIRIO)

Session Classification: Contemporary and modern physics

Track Classification: Contemporary physics and modern physics at school