Ramodgwendé, Weizmann
KIENDREBEOGO

INFORMATION

Born 11.14.1992 at Sabou (Burkina Faso)
Burkinabe Nationality
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ABOUT

Actually PhD student in Astrophysics à l'Université Joseph KI-ZERBO de Ouagadougou (Burkina Faso), I wished since my yougest age to become Astrophysicist and still work on this project at this day.

Holder of a master's degree in Astrophysic, Fundamental Physics Bachelor and a Mathematics, Physics and computer sciences (MPI) two year university degree.

Motivation, adaptability, sincerity, rigor, dynamism and listening are all qualities that will allow me to make the most of this thesis.

STUDIES AND UNIVERSITY

2020-2022 :
***1st** and **2nd year of PhD**,*
at the UFR-SEA, Ouagadougou (Burkina Faso), Université Joseph KI ZERBO,
PhD co-supervised by **Prof. Nelson CHRISTENSEN** (Observatoire de la Côte d'Azur)

2017-2020 :
***Master I** and **II Astrophysics and Materials**,*
at the UFR-SEA, Ouagadougou (Burkina Faso), Université Joseph KI ZERBO

2016-2017 :
***Fundamental Physics Bachelor** ,*
at the UFR-ST, Bobo-Dioulasso (Burkina Faso), Université Nazi Boni

2013-2016 :
***Mathematics, Physics and computer sciences (MPI) two year university degree**,*
at the UFR-ST, Bobo-Dioulasso (Burkina Faso), Université Nazi Boni

Languages
- **French: 100%**
- **English : 65%**

HOBBIES
- **Cinema**
- **Combat sports**
- **Passion for aviation and piloting**
- **Boulder climbing in France.**

Astrophysics:
- **Black holes, Neutrons stars,**
- **Wormholes**
- **Gravitational waves**
- **Multi-messengers**

RESEARCH PROJECT

Title :

Developments for the observation and characterization of gravitational wave multi-messenger sources during LIGO-Virgo observation campaigns.

Abstract :

Advanced LIGO-Virgo observational campaigns have revealed the rich and diverse physics of binary neutron star and binary black hole mergers. In 2017, the simultaneous discovery of gravitational and electromagnetic counterparts of a binary neutron star merger offered an exceptionally detailed view of this extreme phenomenon with numerous results in astrophysics but also in physics (behavior of ultra-dense matter). However, no new multi-messenger detection has been realized since. This is due to the formidable observational challenge of fast and accurate gravitational wave alerts, the immediate reactivity of a network of telescopes and the online data processing for the identification of electromagnetic counterparts. In the framework of this project, I will contribute to the observation, data analysis and theoretical aspects to allow a coincidental discovery of gravitational and electromagnetic waves during the next observing campaign LIGO-Virgo O4 (2022). This study will improve the physics associated with binary neutron star mergers, such as :

- *The improvement the constraint of the equation of state (EOS) of neutron stars and the determination of the expansion rate of the universe.*
- *Increasing the speed of detection, localization and identification of multi-messenger events by observation networks.*
- *Contribute to the observing network's ability to quickly identify the best gravitational wave events for rapid telescope follow-up.*
- *Confirmation of the origin of the production of r elements (neutron-rich elements).*

Thesis team members:

PhD student :
Weizmann Kiendrebeogo, Université Joseph KI-ZERBO, **Ouagadougou** , **Burkina Faso**.

Thesis Supervisor :
Prof Jean Koulidiati, Université Joseph KI-ZERBO, **Ouagadougou**, **Burkina Faso**.
Email : jean.koulidiati2020@gmail.com

Thesis Co-supervisor : *thesis project proponent***,**
Nelson Christensen, **Director of ARTEMIS UMR 7250,** Observatoire de la Côte d'Azur, **Nice, France**.
Email : nelson.christensen@oca.eu

Scientific collaboration:

The **GRANDMA** collaboration (Global Rapid Advanced Network Devoted to Multi-messenger Addicts, https://grandma.lal.in2p3.fr/research/science/)
Manager: **Dr Sarah Antier,** Laboratory Artemis, Observatoire de la Côte d'Azur, **Nice, France.**
Email : sarah.antier@oca.eu

The **NMMA** project **(**Nuclear Multi-messenger Astronomy, https://arxiv.org/abs/2002.11355 **) :**
Manager **: Prof Michael Coughlin,** University of Minnesota , **USA** .
Email : cough052@umn.edu

EXPERIENCE

November 2021– February 2022:
Constrain constrain the **Equation of State (EoS)** of neutron stars and **Hubble constant (Ho),** and the simulation the run O4 scenarios of **LIGO-Virgo-Kagra** collaboration.

August – Obtober 2020 : Internship
Gravitationnal Wave from EMRIs (Extremes mass Ratio) and Stochastic background , à **l'Observatoire de Côte d'Azur (Nice, France).**

January – March 2020 : Master 2 internship: Analysis of the difference in the image obtained when M87* is considered to be (1) a rotating black hole or (2) a rotating wormhole (one of the standard alternatives to black holes) à **l'Observatoire de Paris (Meudon, France).**

November 2019 :
Participation to the Postgraduate Stream during WAISSYA (**West African Summer School for Young Astronomers**) 2019, at Obasanjo Space Centre, at **Abuja** (**Nigeria**).

COMPUTING SKILLS

Computer programming : Languages C, Python, Matlab,
Artificial Intelligence: Machine Learning / Optimization (model fitting), Deep Learning
Simulation: relativistic ray-tracing code, GYOTO, Ligo-Skymap
Numerical solving codes: Sagemath, Einstein Toolkit

Others : LaTex, Beamer, Word, Free Office, Power Point, GitHub, Bitbucket, Visual Studio code, Bayesian statistics, Data analysis, java , Numerical modeling, Big Data, Anaconda, Jupyter notebook, Linux systems, Windows…..

Weizmann Kiendrebeogo
02/10/2022