Masroor C. Pookkillath

PERSONAL DATA

Centre for Theoretical Physics and Natural Philosophy
(NAS) Mahidol University, Nakhonsawan Campus.
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RESEARCH INTERESTS

Dark Energy/Modified Gravity Theories, Test of Gravity, Tensions in Cosmology

EMPLOYMENT

Postdoctoral Fellow September 2022 - Present
Centre for Theoretical Physics and Natural Philosophy,
NAS, Mahidol University. Nakhonsawan , Thailand

Postdoctoral Fellow October 2021
Yukawa Institute for Theoretical Physics, Kyoto University. Kyoto, Japan

EDUCATION

Ph.D. in Physics and Astronomy September 2021
Yukawa Institute for Theoretical Physics, Kyoto University. Kyoto, Japan
Thesis: *Theoretical and Observational Constraints on the Cosmology of theories of Gravity.* Advisor: Prof. Antonio De Felice, Prof. Shinji Mukohyama.

M.Sc.Physics September 2014
Mahatma Gandhi University. Kottayam, India
Thesis: *Thermodynamics of Black-holes in Massive Gravity.*

B.Sc.Physics March 2012
University of Calicut, Kerala, India.
Thesis: *Photometric Identification of HII Region in SDSS*

AWARDS & FELLOWSHIPS

Monbukagakusho: MEXT Scholarship 2018-2021
Awarded by the Japanese government.

Mahidol University International Relation Postdoctoral Fellowship 2023
Awarded International relations division, Mahidol University, Thailand.

RESEARCH GRANDS

Co-PI of Fundamental Fund "Relativistic dynamics of alternative gravity" funded by the National Research Agency (NRCT), Thailand. 2023-2024

ORAL AND POSTER PRESENTATION

Interacting vector dark energy and dark matter fluid. December 05, 2023
Waseda University, Tokyo, Japan (Invited Talk)

Extended minimal theories of massive gravity. April 23, 2023
ICTS, Bangalore, India (Invited Talk)

Extended minimal theories of massive gravity. January 18-21, 2023
Testing gravity 2023 (Contributed Talk)
SFU Harbour Center, Vancouver, Canada

VCDM and Cuscuton. October 12, 2022
Department of Physics, Tokyo Institute of Technology (Invited Talk)

Tokyo, Japan

VCDM: Minimal theory of gravity. — September 15 -18, 2022
NAS Workshop 2022 — (Invited Talk)

Minimal theory of massive gravity and constraints on the graviton mass.
11th Australasian conference on General Relativity and Gravitation — February 2-4, 2022 (Contributed Talk)

The 30th Workshop on General Relativity and Gravitation in Japan. — December 6–10, 2021 (Contributed Talk)

8th Korea-Japan workshop on Dark Energy. — October 18–22, 2021 (Contributed Talk)

Reduction of H_0 tension by means of VCDM — September 14–17, 2021 (Contributed Talk)
The JPS 2021 Autumn Meeting.
Online virtual meeting by the Physical Society of Japan.

Minimally Modified Gravity fitting Planck data better than ΛCDM — September 7–11, 2020 (Contributed Talk)
The Fourth Zeldovich virtual meeting.
ICRANet and National Academy of Sciences of Belarus.

Reducing the H_0 tension with generalized Proca theory — September 3–6, 2020 (Poster)
Vienna Summer School 2020 on Gravitational Quantum Physics, University of Vienna.

Baryon Physics and Tight Coupling Approximation in Boltzmann Code — January 13–22, 2020 (Poster)
The 14th Kavli Asian Winter School on Strings, Particles and Cosmology
Katahira Campus, Tohoku University, Japan.

Baryon Physics and Tight Coupling Approximation in Boltzmann Code — November 25–29, 2019 (Contributed Talk)
The 29th Workshop on General Relativity and Gravitation in Japan
Kobe University, Japan.

Baryon Physics and Tight Coupling Approximation in Boltzmann Code — September 2–6 2019 (Contributed Talk)
Cosmo'19,
RWTH Aachen University, Germany.

Public Outreach

[Talk] *Watching the Expanding Universe* — 27 January, 2024
Public Lecture organized by Nakhon Sawan province local government, Thailand.

[Meet a scientist] *Interaction with high school students* — 25 August, 2023
at Phayuha Pittayakhom School, Nakhon Sawan province. Organized by Nakhon Sawan NAS MANA Camp, Centre for Theoretical Physics and Natural Philosophy, Mahidol University.

[Talk] *On the edge of what we know?* — 29 May, 2023
Public Lecture organized by Café Física & Public Forum, Centre for Theoretical Physics and Natural Philosophy, Mahidol University.

[Talk] *Understanding our Universe: Current status* — 27 June, 2022

Organized by MES Ponnani College, Ponnani, India.

PEDAGOGICAL LECTURE SERIES

Classical Mechanics 20 – 23 July 2023
Lecture series for Undergraduate students, NAS Basic Camp, Centre for Theoretical Physics and Natural Philosophy, Mahidol University.

Introducing symbolic algebra for Gravity and Cosmology 1 - 3 March, 2022
A lecture series on symbolic computational tools *Mathematica* for graduate students, Centre for Theoretical Physics and Natural Philosophy, Mahidol University.

SYNERGISTIC ACTIVITIES

Organizing workshop/conference:
Organizer of conference CosmoGravitas , June 10– 14, 2024.

Organizer of workshop Gravity 2023: Dawn of field theoretic approach, June 18-20, 2023.

Organizer of workshop Gravity: Current challenges in black hole physics and cosmology, June 20 – July 1, 2022.

Journals refereed: The European Physical Journal C, MDPI Mathematics

Other academic activities:
⇒ Examiner for undergraduate students at Mahidol University on presenting research works.
⇒ Orientation on reading research paper at *Mahachulalongkornrajavidyalaya University*, a public Buddhist university in Thailand, Ayutthaya Province, Thailand.

COMPUTER SKILLS

Operating System: Linux, Windows
Programming Language: Julia, Python, C, Groovy.
Others: Maple, Experienced in using Super Computer, Mathematica (xAct, FeynArts), Redberry.

REFERENCES

Antonio De Felice E-mail: antonio.defelice@yukawa.kyoto-u.ac.jp
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Yukawa Institute for Theoretical Physics,
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