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## UNITED STATES-INDIA EDUCATIONAL FOUNDATION

## 2021-2022 Indian Fellows

Print

## Sanjib Kumar Agarwalla

Grant Category: Fulbright-Nehru Academic & Professional Excellence Award (Research)

Project Title: Exploring Fundamental Properties of Massive Neutrinos

Field of Study: Physical Sciences

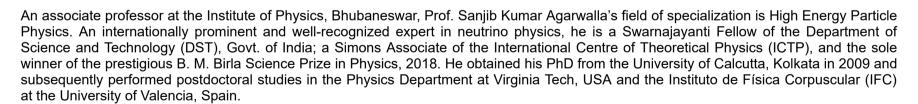
Home Institution: Institute of Physics (IOP), Bhubaneswar, Odisha

Host Institution: University of Wisconsin-Madison, Madison, WI

Grant Start Month: March, 2022

**Duration of Grant:** Nine months





Several world-class experiments have firmly established neutrino flavor oscillation, implying that neutrinos have mass, and they mix with each other. Since neutrinos are massless in the basic Standard Model (SM) of particle physics, we need to invoke physics beyond the Standard Model (BSM) to accommodate non-zero neutrino mass and mixing. Many models of BSM physics suggest the existence of new fundamental particles and interactions, new sources of CP-invariance violation, lepton number, and lepton flavor violations.

During his Fulbright-Nehru research fellowship, Prof. Agarwalla is performing a rigorous test of the three-flavor neutrino oscillation framework and probing various above-mentioned BSM scenarios in the context of currently running and upcoming high-precision long-baseline and atmospheric neutrino oscillation experiments. He is also studying the role of high-energy cosmic neutrinos detected by the IceCube Neutrino

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Observatory at the South Pole to reveal new fundamental particles and interactions, probing energy and distance scales far exceeding those accessible in the laboratory.

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