ıout IIT Kharagpur

ɜagpur - a dusty town tucked away in the eastern corner of
ɜ, famous until 1950 as home to the longest railway
orm in the world - became the nursery where the seed of
IT system was planted in 1951. IIT Kharagpur started its
ney in the old Hijli Detention Camp in Eastern India, where
ɜ of the country's great freedom fighters toiled and
ficed their lives for India's independence. Spurred by the
ess of IIT Kharagpur, four younger IITs sprouted around the
ıtry in the two following decades, and from these five came
sands of IITians, the brand ambassadors of modern India. It
the success of this one institution at Kharagpur that wrote
ɜ's technological odyssey.

Institute takes pride in its relentless effort to provide the
platform for both education as well as research in the areas
ience and technology, infrastructure designs,
epreneurship, law, management, and medical science and
nology. IITKGP is not just the place to study technology, it is
lace where students are taught to dream about the future of
nology and beam across disciplines, making differences
ıgh to change the world.

Program Features/ Structure

Classroom lectures – **80%**

Numerical/ Problem solving, Case study and Activity – **10%**

Panel Discussion- 05%

Hands-on work at Lab-oratory -**05%**

Program Schedule and Venue

1 week, 9 – 14 September 2019 (9:30 AM – 6 PM)

IIT Kharagpur – Department of Physics

Program Fee

Nil for AICTE-QIP sponsored participants

For others - INR 3,000/- (Three thousand) **+ GST** @18% per participant (includes only participation with lunch & snacks during session and welcome kits)

Who will benefit (Eligibility)

you are an advanced 4 years BS, MSc, B Tech, MTech, , PhD with good knowledge in quantum Mechanics

Last day of Registration

19
AUG, 2019

Accommodation

Accommodation will be provided to the AICTE-QIP sponsored parti-cipants at the campus Guesthouse. For other participants, the same will be provided on chargeable basis as per rule.

How to Apply

Use the link: **https://erp.iitkgp.ac.in/CEP/courses.htm** to apply ONLINE.

Signup → Login → Profile Fillup → Choose a Program → Apply Now

Payment if applicable is to be done **ONLINE** after getting short listed for the program.

Contact Us

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Department of Physics

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AICTE-QIP

QUALITY IMPROVEMENT PROGRAMME

Indian Institute of Technology Kharagpur
2019

Manifestations of Angular Momentum in Light & Quantum Matter

1 Week
9 – 14 September 2019

Introduction / Overview

of the central themes in present day science and nology is diverse studies in Classical and ntum Optics stemming from the light-matter action where Nobel prizes bestowed several times last two decades. Since the seminal observation rbital angular momentum of light around two des back, this twisted beam has opened new area esearch with a plethora of applications and ementations in physics, chemistry, biology, hanics, electronics and communications. Even , there exist open theoretical and experimental lenges in these fields, especially in experimental zations of spatially manicured beams (in terms of nsity and angular momentum), complex ipulation of classical and quantum matter, the lification of very small effects using weak surements, and the various intriguing dynamics aled at ultra-small time scales at different ranges e electromagnetic spectrum.

Program Objectives

s short course would introduce different ifestations of classical and quantum angular nentum of light and matter. Physical cases will ighlighted on the spin-orbital coupling and its sequences. The transfer mechanisms of orbital ular momentum between light and matter will explained along with the physics behind the rolled manipulation of atoms and micro- icles. Participants will be provided advanced wledge on the applications of vortex beams in field of weak measurements, quantum munication and quantum information. In tion, participants will visit our existing anced laboratories at the department for few sical demonstrations of some of the physics ussed.

What you will learn

Program Content

1) Basics of angular momentum algebra and manifestations in quantum matter

2) Orbital and Spin angular momentum properties of light

3) Spin orbit interaction of light

4) Angular momentum of light in

-----Manipulation of atoms and particles

-----Femto and Atto-second physics

-----Weak measurements

-----Quantum communication and Information

About the Faculty

Sonjoy Majumder
Professor, Department of Physics, IIT-Kharagpur
Expertise: Light-matter interaction, Vortex beam, Ultra-Cold Atoms and Molecules

Other faculties for the course

Debashis Mukherjee,
S N Bose Chair Professor, SNBNCBS, Kolkata
Ex-Director, IACS, Kolkata
Expertise: Molecular many-body theory, theoretical spectroscopy, Finite temperature non-perturbative many-body theories

Subhasish DuttaGupta
Honorary Professor, University of Hydrabad
Adjunct Professor, TIFR
Expertise: Spin-Orbit coupling, Non-linearr Optics, PT symmetry etc.

Prasanta K. Panigrahi
Professor, IISER-Kolkata
Experise: Quantum Computation and Quantum Information, Ultra-cold Boson and Fermion, etc

Bimalendu Deb
Professor, IACS, Kolkata,
Expertise: Quantum optics, photo-association and Feshbach spectroscopy, optical manipulations of atomic and molecular systems, Bose and Fermi superfluidity with ultracold atomic gases

Nirmal K. Viswanathan
Professor, University of Hyderabad
Expertise: Singular Optics, Non-diffracting beam etc.

Ayan Banerjee
Professor, IISER-Kolkata
Expertise**:** Light matter interaction at the mesoscopic scale employing optical tweezers, biophotonics, precision optical and atomic spectroscopy

Nirmalya Ghosh
Professor, IISER-Kolkata
Expertise: Optics, Spectroscopy, Bio-photonics, Nano-Optics