

Introduction to Quantum Chromodynamics (QCD)

Overview

The discovery of the Higgs boson at the Large Hadron Collider (LHC) at CERN has started a new era in High Energy Physics where the focus of collider based research at LHC and other experimental facilities will be on accurate determination of Higgs properties as well as on the search for new physics beyond standard model. With the start of Run II of LHC, there will be major challenges for both experimentalists and theoreticians. A key challenge would be to gain a good understanding of signal and background processes to be able to make predictions for the complex final states observed at LHC. In the past few years, there has been enormous progress in our ability to do so due to advances made in in the area of perturbative Quantum Chromodynamics (pQCD)- the successful theory of strong interaction.

The aim of the present course is to prepare research students for theoretical research in QCD to enable them to work on its applications in the future research program of LHC and other colliders.

Dates	2nd November, 2016- 9th November, 2016
Host Institution	University of Mumbai
Topics	<ul style="list-style-type: none"> • <i>Introduction to QCD [symmetries, quantization, renormalization]</i> • <i>Infrared aspects: KLN theorem, factorization, eikonal approximation, webs</i> • <i>Resummation of large logarithmic corrections, and applications to LHC processes</i>
You should attend if...	<ul style="list-style-type: none"> • <i>You are a Ph. D. students working in the area of theoretical and experimental High Energy Physics (HEP)</i> • <i>You are a post-doctoral fellow or young researchers in HEP</i> • <i>You are senior colleague in a university or national institute and find the course useful due to specialized topics</i>
Registration Fees	<p><i>The participation fees for taking the course is as follows:</i></p> <p>Ph. D. Students : Rs . 1000.00</p> <p>M.Sc, Students : NIL</p> <p>Participants from abroad : US \$100.00</p> <p>Senior Faculty from Academic Institutions: Rs. 2000.00</p> <p><i>The above fee include all instructional materials, computer use for tutorials and assignments, laboratory equipment usage charges, 24 hr free internet facility. The participants will be provided with accommodation on payment basis.</i></p> <p>Mode of payment: Demand draft in favour of "Registrar, University of Mumbai" payable at Chennai</p> <p>The demand draft is to be sent to the Course Coordinator at the address given below.</p>
Accommodation	<p><i>The participants may be provided with hostel accommodation depending on the availability, on payment basis.</i></p> <p>Request for hostel accommodation may be submitted by sending a mail at</p> <p>GIAN_QCD@mu.ac.in</p>

The Faculty



Prof. Eric Laenen
Professor in Theoretical Physics,
University of Amsterdam
Research Interest: High Energy Collider Phenomenology and QCD

Prof. Eric Laenen is an internationally renowned expert in the area of high energy collider phenomenology and Quantum Chromodynamics. He received his Ph.D. from Stony Brook University, and held postdoctoral positions at Fermilab and CERN. Prof. Laenen is the head of the theory group at Nikhef, Amsterdam, Netherlands since 2005. He is also Professor of Theoretical Physics at the University of Amsterdam and at Utrecht University.

Prof. Eric Laenen has wide teaching experience and has given lectures at more than 10 international schools in HEP including the prestigious CTEQ school and the European CERN School in High Energy Physics.



Prof. Anuradha Misra
Professor and Head of the Department,
University Department of Physics, Mumbai University
Research Interest: Quantum Chromodynamics and Light-front field theory

Course Co-ordinator

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[Under the aegis of MHRD- Global Initiative of Academic Network (GIAN)]

(November 2- 9, 2016)

Registration Form

Title (Mr./Ms./Mrs./Dr./Prof.):

Full Name:

Designation:

(For students, name of the course and the year are to be mentioned clearly)

Name of the Institution:

Address for Correspondence:

E-mail:

Phone:

Accommodation Required: YES/NO

Exemption from Registration Fee Required YES/NO

(If yes, give reason within 50 words on a separate sheet)

Reason for Participation:

(Within 150 words on a separate sheet)

Place:

(Signature of the Applicant)

Date:

Forwarded by HOD/Supervisor

Note: Duly filled-up signed and scanned registration form should be sent to the e-mail id: *GIAN_QCD@mu.ac.in* before September 2, 2016.

