DEPARTMENT OF PHYSICS
PANJAB UNIVERSITY
CHANDIGARH
SIX-MONTHLY PROGRESS REPORT
PROFORMA FOR Ph.D. CANDIDATES

01.07.2013 to 31.12.2013
(To be submitted bi-annually by June, 30th and December, 31st)

1. Name of the candidate: Anterpreet Kaur
2. Faculty : Science
3. Department : Physics
4. Enrollment No. and Date : 13/1033 , 10-04-2013
5. Registration No. and Date : N.A.
6. Tentative/Approved Title : Synopsis not submitted yet
7. A summary of the work done during the last six months (Depending upon the stage of Ph.D. work) providing details of (i) Review of Literature (ii) Experimentation/Data Collection, Field work (iii) Data Processing (iv) Data Analysis and Interpretation and (v) Stage of thesis writing with specific reference to the goals set for the previous 6 months. (Separate sheet attached)
8. Did you complete the tasks and achieve the goals you had set for the period under report ?
   Yes/No : Yes
   If No : Difficulties, Constraints faced in achieving the objectives that had been formulated for the period under report.
9. Publications if any : Yes "**Subjet Multiplicities at LHC Energies and the QCD Color Factor Ratio", Advances in High Energy Physics, vol. 2013, Article ID 585809, 11 pages, 2013. doi:10.1155/2013/585809.**

Certificate :

It is certified that the information provided above is correct to the best of my knowledge. I shall try my best to achieve the above targets during the next six months.

Name of the Candidate : Anterpreet Kaur

Signature :

Certificate:

Progress report of the candidate : Satisfactory/Unsatisfactory/Need to be improved

Supervisor Name : Prof. Manjit Kaur

Signature :

Counter –Signature of the Chairperson

PROGRESS REPORT

I have compiled the results in which we have studied the jet substructure in proton-proton (pp) collisions at centre-of-mass energies, $\sqrt{s}$ = 7 TeV and 14TeV by simulating events using event generators. We have calculated the color factor ratio, C_A/C_F by using $r = \langle M_g \rangle - 1/\langle M_q \rangle - 1$, where M_g, M_q are the average subjet multiplicities in gluon and quark jets respectively. We got the results published in its final form in the "Advances in High Energy Physics" under the title :
"Subjet Multiplicities at LHC Energies and the QCD Color Factor Ratio", Advances in High Energy Physics, vol. 2013, Article ID 585809, 11 pages, 2013. doi:10.1155/2013/585809.

At present, the LHC is shut down for upgradation. As a part of Hardware work, I participated in the weekly **Quality Certification Shifts** of the HO Upgrade Analysis and analyzed the HO shifts data online from 10th July, 2013 to 17th July, 2013 and from 6th September, 2013 to 16th September, 2013.

Other Activities :

- I gave a presentation under the title "**Subjet Structure in p-p collisions at LHC energies"** in India CMS Meeting held at Panjab University, Chandigarh on 23rd – 24th August, 2013.

- I attended **CMS Data Analysis School** at SINP, Kolkata, India from 7th November, 2013 to 11th November, 2013.

- I also attended **IX SERC SCHOOL ON EXPERIMENTAL HIGH ENERGY PHYSICS** at IIT, Madras from 2nd December, 2013 to 21st December, 2013.

Goals for the next six months :

- My visit to CERN is being planned from 20th January, 2014 for 90 days. I will analyze the CMS data at different center of mass energies to study the jet substructure.

- I will also participate in the ongoing HO related hardware activities.

- To work with the HO Upgrade group to study the stability and the Peltier behavior of the SiPMs after their installation.

- To focus on my Physics Analysis problem.

- To attend various talks and lecture programs that would be helpful for my Ph.D degree.

ANTERPREET KAUR,
DEPARTMENT OF PHYSICS,
PANJAB UNIVERSITY, CHANDIGARH.