

## APPLICATION FOR SUBMISSION OF PH.D. THESIS

1. Full Name (IN BLOCK LETTERS)  
ANKITA MEHTA  
(As Regd. in University records)
2. Category to which you belong  
SC/ST/BC/OBC/General General
3. Father's Name  
(IN BLOCK LETTERS)  
SUSHIL KUMAR MEHTA
4. Title of the thesis (as approved by the Univ.)  
" STUDY OF DI-BOSON PROCESSES IN CMS EXPERIMENT AT LARGE HADRON COLLIDER "
5. Faculty/Subject/Department  
PHYSICS
6. University Registration No.  
ST 12063 W.e.f. 13/12/2014
7. Ph.D. Enrolment No. 19516 dated 30/11/2012
8. Particulars of last extension granted by the University  
(a) Date upto which granted 29/12/2017  
(b) Vide letter No. 21306 dated 04/12/2017
9. (i) If the thesis is being submitted after five years, please state whether applied for condonation of delay.  
(ii) Kindly give full details of the condonation as permitted by the University.  
(i) -  
(ii) Date upto which delay condoned -  
vide letter No. -  
dated -
10. If the thesis is being submitted before the expiry of the period of three years, please state whether the necessary exemption has been applied for/obtained  
(i) Applied on -  
(ii) Allowed vide No. -  
Dated -
11. Name(s) of the Supervisor(s) and his/her/their Academic designation, address(es).  
(i) Prof. J.B. Singh  
Professor, Department of Physics,  
Pangab University Chandigarh  
(ii) Prof. Vipin Bhatnagar  
Professor, Department of Physics,  
Pangab University Chandigarh  
(iii) Prof. Nick Van Remortel  
Professor, Department of Physics, University of  
Antwerpen, Belgium.
12. Please indicate the exact relationship if the candidate is related to the Supervisor(s)  
(i) -  
(ii) -
13. Particulars of thesis evaluation fee of Rs. \_\_\_\_\_ deposited with the University (please attach the original receipt)  
Receipt No. \_\_\_\_\_  
Dated \_\_\_\_\_
14. Particulars of Foreign Language(s) passed (in case of students under Science Faculty only) (attach Photocopy of the relevant certificate, if exempted, please attach the exemption letter in original)  
Year of Passing \_\_\_\_\_ Roll No. \_\_\_\_\_  
University \_\_\_\_\_ Score \_\_\_\_\_

15. Please enclose the original "NO DUE CERTIFICATE" from the Student section of the University Accounts Branch.

I declare that the information given above is true and correct to the best of my knowledge and belief. The requisite certificate from the thesis Supervisor(s) is also enclosed.

(Full Signatures of the Candidate)

Countersignatures of the Supervisor(s)

Chairperson

Sr. No.      Name      Full Signatures

(i) Prof. J. B. Singh

Name Prof. Navdeep Goyal

(ii) Prof. Vipin Bhatnagar

Full Signatures \_\_\_\_\_  
(Seal of the office)

(iii) Prof. Nick Van Remortel

Name of  
the Dept. PHYSICS  
Dated \_\_\_\_\_





PANJAB UNIVERSITY, CHANDIGARH

Certificate to be submitted by the Supervisor(s) of the candidate supplicating for Ph.D. degree.

With regard to the thesis entitled, "STUDY OF DT-BOSON PROCESSES IN CMS EXPERIMENT AT LARGE HADRON COLLIDER"

for the Ph.D. degree of this university, I/we certify that :-

- (i) he/she has carried out research work under my/our direct supervision and guidance for the period from 30/11/2012 to December, 2017 and that the manuscript of the thesis has been thoroughly scrutinized by me/us keeping in view the requirements of the regulations of the University, quoted as under :
- (a) The thesis must be a piece of original research work characterised either by the discovery of new facts or for a fresh interpretation of the known facts or theories; in either case, it shall give evidence of the candidate's capacity for original reserach, critical examination and judgement;
- (b) The thesis shall consist substantially of the candidates own work, underscoring his individual contribution. The candidate may, however, submit in support of his thesis, any printed contribution for the advancement of his subject which may be published, independently or conjointly. In the latter case, the candidate shall indicate specifically his personal contribution to the conjoint work duly attested by the supervisor.
- (c) The thesis shall indicate how it embodies the results of candidate's own research or observations and the respects in which the candidate's investigations appear to him/her to have advanced study of the subject.
- (ii) The present work has not previously formed the basis for the conferment of any degree/diploma/associateship/fellowship/ other similar title of recognition by this or any other University/Institution.
- (iii) He/she has completed his/her research work to my/our entire satisfaction and that it is also satisfactory in its literary presentation.
- (iv) All the final typed copies of thesis, which are being submitted to the University office have been carefully read by me/us for accuracy/correctness of its material and language and the same are to my/our entire satisfaction. The thesis is worthy of consideration for award of Ph.D. degree.
- \*(v) The candidate has already paid to the University the total course fee for the entire research period under reference.

OR

The candidate has been exempted by the University from payment of the fee for the research period under reference on the basis of the satisfactory progress reports vide letter No. \_\_\_\_\_ dated \_\_\_\_\_.

\* Note : DELETE WHICHEVER IS NOT APPLICABLE.

*Anu's*  
*Hent*  
(Full Signatures of the Candidate)

Dated \_\_\_\_\_

CountersignedSr. No. Supervisor(s) NameFull Signatures(i) Prof. J. B. Singh(ii) Prof. Vipin Bhatnagar(iii) Prof. Nick Van Remortel

Chairperson/ChairpersonName Prof. Navdeep Goyal

Full Signatures \_\_\_\_\_

(Seal of the office)

Name of the Dept. PHYSICS

Dated \_\_\_\_\_

PANJAB UNIVERSITY, CHANDIGARH

With regard to thesis entitled, "STUDY OF DI-BOSON PROCESSES IN CMS EXPERIMENT AT LARGE HADRON COLLIDER"

submitted by me, I declare as under :-

- (i) That I have carried our research work under the direct supervision and guidance of my Ph.D. Supervisor(s) Prof. J.B. Singh, Prof. Vipin Bhatnagar, Prof. Nick Van Remortel

[Name(s) of Supervisor(s)]

for the period from 30/11/2012 to 12/2017 and that the manuscript of the thesis has been scrutinized by him/her/them.

- (ii) While submitting my Ph.D. thesis, I have fully taken into account and complied with the following requirements of the University rules/regulations, governing the submission of thesis/award of Ph.D. degree.
- (a) The thesis must be a piece of original research work characterised either by the discovery of new facts or for a fresh interpretation of the known facts or theories; in either case it shall give evidence of the candidate's capacity for original research, critical examination and judgement.
  - (b) The thesis shall be satisfactory in its literary presentation.
  - (c) The thesis shall indicate how it embodies the results of the candidate's own research or observations and the respects in which the candidate's investigations appear to him to have advanced study of the subject.
  - (d) A candidate may incorporate, in his thesis, contents of any work which he may have published on the subject, but he/she shall not submit, as his/her thesis, any work for which a degree has been conferred by this or any other University/Institution.
  - (e) The candidate shall declare in writing, duly countersigned by his Supervisor(s) & Head of Department/Principal, Home Science College, that the thesis is not substantially the same as the one he/she may have already submitted to this/another University
  - (f) The thesis shall consist, substantially of the candidate's own work underscoring his/her individual contribution. The candidate may, however, submit, in support of his/her thesis any printed contribution, for the advancement of his/her subject which may be published independently or conjointly. In the latter case, the candidate shall indicate specifically, his/her personal contribution to the conjoint work duly attested by the supervisor(s).
- (iii) I give an undertaking that I shall not publish my thesis (whether approved or rejected or recommended for revision) without the previous permission of the Syndicate/Vice-Chancellor. If this permission is granted, I shall supply to the Controller of Examinations, P.U., three copies of the published thesis, one copy to be placed in the University Department concerned/ Home Science College and the remaining two copies in the University Main Library. I shall also furnish the University, with copies of reviews of my publication which, alongwith the book, shall be brought to the notice of the Syndicate/ Vice-Chancellor.

Dated \_\_\_\_\_

(Full signatures of the Candidate)

Full Name ANKITA MEHTA

Address Dept. of Physics  
Panjab University  
Chandigarh

PIN 16 0014

Phone(s) 9876153060



Countersignatures of Supervisor(s)

Chairperson of the Department


(i) \_\_\_\_\_  
(Full Signatures/Date)  
Name Prof. J. B. Singh  
Address Deptt. of Physics  
Punjab University Chandigarh

(Full Signatures with seal of the office)

Name Prof. Nandeep GoyalName of  
the Dept. PHYSICS

Dated \_\_\_\_\_

(ii) \_\_\_\_\_  
(Full Signatures/Date)  
Name Prof. Vipin Bhatnagar  
Address Deptt. of Physics  
Punjab University Chandigarh

(iii)   
(Full Signatures/Date) December 18, 2017  
Name Prof. Nick Van Remortel  
Address Deptt. of Physics,  
University of Antwerpen  
Belgium

## PANJAB UNIVERSITY, CHANDIGARH

## Certificate to be submitted at the time of submission of Ph.D. thesis

It is certified that :

1. (Applicable of the Faculty of Science) minimum one Research paper related to area/topic of my Ph.D. has been published or in a referred journal after my date of enrolment i.e. ....to Ph.D. The detail of research papers published is given below :

Sr. No.	Date of Publication	Name of the Journal	Title of the Research Paper	Remarks/Status
1.	9 <sup>th</sup> September, 2016	Journal of High Energy Physics JHEP, Vol 09, 151	Search for Higgs boson off-shell production in proton-proton collisions at 7 and 8 TeV and determination of constraints on its total decay width	Published
2.	2017	Proceedings of Science POS(EPJ-HEP-2017), 389	Measurements of the underlying event activity and double parton scattering processes using the CMS detector	Published

Strike out whichever is not applicable. Attached copy(ies) of the Paper(s) with his proforma as well as in the thesis itself.



(Signature of the candidate)

Deptt. of PHYSICS

Verified :

(Supervisor)

Deptt. of PHYSICSCounter signed by Chairperson  
(Stamp)