

# Patrick Dunne

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## Research Experience

- 2012-present **PhD Student**, *Imperial College*, Expect to submit early in 2016
- Led searches for invisibly decaying Higgs bosons with the CMS detector focussing on the most powerful VBF production channel
  - Led the combination of all CMS direct searches for invisible Higgs boson decays
  - Supervised 3 masters students and 2 summer students working on invisibly decaying Higgs boson searches
- 2013 **Long Term Attachment**, *CERN*
- Carried out detector operations shifts on the CMS detector
- 2012 **Masters Project**, *University of Oxford*
- Investigated the ‘Qjets’ algorithm for stochastic jet clustering as part of the ATLAS collaboration
- 2005-2011 **Summer Projects**, *LLNL, Oxford, CERN, MIT*

## Education

- 2008-2012 **MPhys Physics**, *University of Oxford*, First class honours degree
- 2005-2008 **5 grade As at A level, 10 A\*s (2 short course) and 2 As at GCSE**

## Academic Awards

- 2013-2014 **Poster Prizes**, *Science Technology Facilities Council, Imperial College Physics Department and Graduate School*
- 2012 **Peter Fisher Prize for best physics finals results**, *Trinity College Oxford*
- 2012 **Mitchell Scholarship for Outstanding Students**, *Trinity College Oxford*
- 2009-2012 **Millard Scholarship and Exhibition**, *Trinity College Oxford*
- 2010 **Gibbs Prize for Public Speaking**, *University of Oxford Physics Department*
- 2010 **Examiners’ Commendation**, *Oxford University Physics Department*
- 2008 **Neate Physics Prize**, *Sutton Grammar School*

## Publications

Co-author on 154 citable papers as part of the CMS collaboration (inSPIRE HEP, January 2016) and have an  $h_{\text{hep}}$  index of 34. Selected papers with substantial contributions are given below:

- 2015 **CMS Collaboration**, ‘A combination of searches for the invisible decays of the Higgs boson using the CMS detector’, CMS Physics Analysis Summary - HIG-15-012
- 2015 **CMS Collaboration**, ‘Search for invisible decays of Higgs bosons in the vector boson fusion production mode’, CMS Physics Analysis Summary - HIG-14-038
- 2014 **CMS Collaboration**, ‘Search for invisible decays of Higgs bosons in the vector boson fusion and associated ZH production modes’, *Eur. Phys. J. C* 74 (2014) 2980
- This paper has received 134 citations (inSPIRE HEP, January 2016)
- 2013 **CMS Collaboration**, ‘Search for invisible decays of Higgs bosons in the VBF channel’, CMS Physics Analysis Summary - HIG-13-013

## Thesis

**Searches for invisibly decaying Higgs bosons with the CMS detector**  
Expect to submit March 2016