

# CHAD FLORES

xadflores@gmail.com  $\diamond$  (916) · 207 · 4058  
linkedin.com/in/chad-flores  $\diamond$  github.com/xadflores

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Ph.D. candidate in Experimental High Energy Nuclear Physics with a focus on statistical analysis of large collider data, in particular, the study of  $\Upsilon$  mesons via the di-muon decay channel at CMS.

## EDUCATION

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**PhD Physics**, University of California, Davis Expected June 2017  
Dissertation:  $\Upsilon$ (nS) production and suppression in 5.02 TeV PbPb collisions at the LHC with CMS

**MS Physics**, University of California, Davis December 2012

**BS Physics**, University of California, Davis June 2011  
with Honors

**AS Natural Science**, Sierra Community College May 2008  
with Honors

**AA Liberal Arts**, Sierra Community College May 2008  
with Honors

## TECHNICAL STRENGTHS

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**Computing** Linux/UNIX, C++, ROOT, bash, python, LabView, HTML, L<sup>A</sup>T<sub>E</sub>X, SQL, SVN, git, Matlab

**Equipment** Analog Electronics, Oscilloscopes, NI-DAQ, nano-fabrication

## RESEARCH EXPERIENCE

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**Graduate Student Researcher** December 2012 - Present  
*University of California, Davis* Adviser: Manuel Calderón de la Barca Sánchez

- Studying properties of a new nuclear state of matter, such as temperature, at the **Large Hadron Collider** (LHC) as a member of the **Compact Muon Solenoid** (CMS) experiment.
- **Team lead/contact** for the study on "Strong Suppression of  $\Upsilon$  excited states in PbPb collisions at  $\sqrt{s_{NN}} = 5.02$  TeV," CMS PAS HIN-16-008.
- **Statistical analysis** of nuclear collisions of order billions of events and analysis of **Monte Carlo** (MC) simulations produced on a distributed submission framework at CMS for constraining data. This included determining signal and background fit models, calculating muon and dimuon efficiencies for both MC and data-driven studies, estimating systematic uncertainties that arise from these studies and extracting confidence intervals for highly suppressed states.
- **Mentor/Senior lead** for other CMS graduate students and undergraduates to guide them to become productive researchers in the collaboration.
- **International collaborator** with members from USA, Switzerland, France, Korea, and India.
- Cathode Strip Chamber Detector On-call Expert – carried phone in 24/7 shifts and was responsible for urgent intervention/maintenance during data taking. I Also monitored this system offline for Data Quality.

**Undergraduate Researcher** April 2010 - September 2011  
*University of California, Davis* Adviser: Kai Liu

- Developed live monitoring system for etching irradiated polycarbonate membrane films.

- Experience in thin film preparation and producing magnetic/metallic nanowires using electrochemical deposition.

## WORK/TEACHING EXPERIENCE

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### Graduate Teaching Assistant

September 2011 - June 2014

*University of California, Davis*

- Directed advanced physics lab course on the use of electronics and computers for experimentation including debugging and data acquisition.
- Led various introductory physics labs and discussions for both life science and physical science.

### Sound and Vibration Control Technician

March 2007-August 2007

*j.c. brennan & associates, Inc.*

- Field studies for noise and vibration measurements and analysis of data collected.

### HVAC Mechanical Equipment Estimator

March 2006 - March 2007

*Air Tech Sales*

- Analyzed mechanical portion of building blue prints for HVAC equipment specifications and produced quotes.

## HONORS AND AWARDS

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2015 GAANN Fellow, UC Davis Physics.

2014 Chateaubriand Fellow, École Polytechnique and CERN (France).

2011 Cal Aggie Alumni Outstanding Senior Award, Physics

Phi Kappa Phi, Undergraduate Honor Society Member - UC Davis

Phi Theta Kappa, Undergraduate Honor Society Member - Sierra Community College

## OUTREACH

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2010-12, Mentor for PUENTE Program, Sierra Community College

2009-12, K-12 Physics Club visits in Sacramento Area, UC Davis Physics

2011, Physics Show at Picnic Day, UC Davis Physics

2011, Meet an Undergrad Video, UC Davis Physics

<http://physics.ucdavis.edu/academics/undergraduate-program/meet-some-our-students>

## SELECTED PUBLICATIONS

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1. CMS Collaboration, "Measurement of Nuclear Modification Factors of  $\Upsilon(nS)$  mesons in PbPb collisions at  $\sqrt{s_{NN}} = 5.02$  TeV," CMS Physics Analysis Summary, HIN-16-023. <http://cds.cern.ch/record/2244680?ln=en>
2. V. Khachatryan *et al.* [CMS Collaboration], "Suppression of  $\Upsilon(1S)$ ,  $\Upsilon(2S)$  and  $\Upsilon(3S)$  production in PbPb collisions at  $\sqrt{s_{NN}} = 2.76$  TeV," *Submitted to PLB* arXiv:1611.01510 [nucl-ex]
3. V. Khachatryan *et al.* [CMS Collaboration], "Suppression and azimuthal anisotropy of prompt and nonprompt  $J/\psi$  production in PbPb collisions at  $\sqrt{s_{NN}} = 2.76$  TeV," *Submitted to: Eur.Phys.J.C* arXiv:1610.00613 [nucl-ex].
4. CMS Collaboration, "Strong Suppression of  $\Upsilon$  excited states in PbPb collisions at  $\sqrt{s_{NN}} = 5.02$  TeV," CMS Physics Analysis Summary, HIN-16-008. <https://cds.cern.ch/record/2217909/files/HIN-16-008-pas.pdf>

Full list of publications at: <http://inspirehep.net/author/profile/C.Flores.2>

## INVITED TALKS

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C. Flores [CMS Collaboration], "Bottomonia results from LHC Run 1 and 2 with CMS," Talk at Quark Matter 2017. <https://indico.cern.ch/event/433345/contributions/2358628/>

C. Flores [CMS Collaboration], "Bottomonium production in pp and PbPb collisions with the CMS experiment," Talk at Strangeness in Quark Matter 2016. <https://indico.cern.ch/event/403913/contributions/1849310/>

## CONTRIBUTED TALKS - UNDERGRAD

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E. Burks, C. Flores, D. Gilbert, K. Liu, T. Felter, S. Charnvanichborikarn, S. Kucheyev, J. Colvin, "Synthesis of Low Density Metallic Nanowire Network", In APS Meeting Abstracts, 2013.

J. Colvin, S. Charnvanichborikarn, T. Felter, C. Flores, K. Fournier, D. Gilbert, S. Kucheyev, K. Liu, "On Optimizing K-Shell X-ray Conversion Efficiencies with New Nano-structured Laser Targets", In APS Meeting Abstracts, 2011.