# EVAN KLOSE FRIIS

Rue de Peupliers 12
1205 Genève
Switzerland
friis@physics.ucdavis.edu
+1 (530) 207-0353

## EDUCATION

*June 2011 Est.* University of California, Davis

*Ph.D. Experimental High Energy Physics*

Thesis: "Search for Higgs bosons decaying to $\tau$ leptons at $\sqrt{s} = 7$ TeV"
Member of the Compact Muon Solenoid (CMS) collaboration at CERN (2005–Present).
Advisor: Professor John Conway

*June 2005* University of California, San Diego

*B.S. Physics*

Research experience: Designed control system for non-neutral positron plasma trap.

## TECHNICAL SKILLS

*Software* C++, Python, ROOT, LabView, AutoCAD

*Electronics* Analog/Digital, Atmel Microcontrollers

*Hardware* Metal & wood working, some welding

## RESEARCH EXPERIENCE

*2009-Present* Higgs Group, CMS

*Higgs physics*

Performed analysis searching for Minimal Super Symmetric Model (MSSM) Higgs bosons in the $H \to \tau\tau \to \mu + \tau_{\text{hadrons}}$ channel. Set new exclusion limits on the MSSM with 36 pb$^{-1}$ of 2010 CMS data. Authored the "Secondary Vertex Fit," a novel algorithm for reconstructing the invisible energy in $\tau$ lepton events that dramatically improves kinematic resolution and event acceptance. The Secondary Vertex Fit method improves the MSSM $\tan\beta$ exclusion limit by 20%, pushing the CMS result past the current Tevatron limit.

*2009-Present* Electroweak Tau Group, CMS

*$\tau$ physics*

Measured $Z \to \tau\tau$ cross section using the 2010 CMS data set. Developed methods and software for data–driven estimation of backgrounds from hadronic jet mis–tags in $\tau$ lepton analyses.

*2006-Present* Tau Physics Object Group, CMS

*$\tau$ identification*

Developed the "Tau Neural Classifier" tau identification algorithm, which has a jet mis–tag rate that is a factor of five lower than the previous algorithm used in CMS. Measured the hadronic jet mis–tag rate from first 7 TeV CMS datasets. Currently serve as software librarian and liaison to CMS reconstruction software group.

*2010-Present* Luminous region monitoring at CMS

*Beamspot*

Developed and supported tools to measure and monitor the luminous collision region at the CMS experiment.

*2007-2008* Pixel Detector Calibrations, CMS

*Pixel Detector* Designed and developed software to measure the gain, noise, and thresholds of the sixty million channels of the CMS silicon pixel detector. Developed data formats and tools to store calibration results in the CMS conditions database.

*2003-2005* Scripps Institute of Oceanography

*Machine shop* Provided shop support to oceanographic experiments.

*Summer 2004* Princeton Plasma Physics Laboratory

*Tritium group* Developed test stand to simulate the high–frequency pulsed pressure conditions found in electron-beam pumped excimer lasers.

## AWARDS AND HONORS

*Spring 2009* Visiting Scholar, Scuola Normale Superiore, Pisa, Italy

*2005, 2009* UC Davis Block Grant Recipient

*2006-2007, 2009* UC Davis GAANN Fellow

## TEACHING

*January 2010* Workshop Facilitator, EJTERM 2010, Fermi National Laboratory

*Five quarters* UC Davis Physics 116 Electronics Lab Assistant - assisted in developing new curriculum using modern microcontrollers.

*Three quarters* UC Davis General Physics (7/9)

## INVITED TALKS

*April 2011* "Tau Reconstruction at CMS", Tau Portal HEFTI Workshop, Davis, California

*September 2010* "Tau reconstruction and identification in CMS", 11th International Workshop on Tau Lepton Physics, Manchester, United Kingdom

*May 2010* "Tau ID Object Performance ", US CMS Collaboration Meeting, Brown University, Providence, Rhode Island

## PUBLICATIONS

See attached list.