EVAN KLOSE FRIIS

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EDUCATION

June 2011 Est. University of California, Davis

Ph.D. Experimental High Energy Physics

Thesis: "Search for Higgs bosons decaying to τ 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.

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 τ lepton events that dramatically improves kinematic resolution and event acceptance. The Secondary Vertex Fit method improves the MSSM $\tan\beta$ exclusion limit by 20%, giving CMS the world's best limit on the MSSM.

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 τ 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 the coordinator of the offline tau software and liaison to CMS reconstruction software group.

2010-Present Luminous Region Monitoring, 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

Hydraulics Lab Provided machine 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.

LEADERSHIP

2009-Present CMS Tau Offline Software Coordinator

AWARDS AND HONORS

Spring 2010 Finalist, UC Davis Big Bang! Business Plan Competition

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, Fermilab

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 "Search for Neutral MSSM Higgs Bosons Decaying to Taus", LPC Physics Forum, Fermilab, Illinois

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.