

Final Technical Report for DE-SC0008098

The Seventh International Workshop on the CKM Unitarity Triangle (<http://ckm2012.uc.edu/>) was held at the University of Cincinnati September 28-October 2, 2012. This workshop series is one of the leading meetings in the field of quark flavor physics. Previous workshops were held at CERN (2002), University of Durham (2003), University of California, San Diego (2005), University of Rome (2006), Nagoya University (2008), and University of Warwick (2010). The Cincinnati workshop provided a venue for theorists and experimentalists to discuss the latest results and to develop new ideas for improved analyses. The most recent measurements from current experiments as well as the status of future experiments were discussed. On the theoretical side, progress in lattice QCD and other calculational techniques that allow more precise determinations of CKM matrix elements were presented.

Organization

Workshop presentations were organized into plenary and parallel sessions. The parallel sessions were organized into seven “working groups” covering major subfields of quark flavor physics. Each working group (WG) had both theoretical and experimental conveners:

- *WG I: Precise determination of V_{ud} and V_{us} .* Conveners: Takashi Kaneko (KEK), Barbara Sciascia (INFN Frascati).
- *WG II: Determination of V_{ub} , V_{cb} , V_{cs} , and V_{cd} through inclusive and exclusive semileptonic B and D decays.* Conveners: Junko Shigemitsu (Ohio State U.), Frank Tackmann (DESY), Phillip Urquijo (Bonn U.).
- *WG III: Rare B , D , and K decays (including radiative decays, electroweak penguin decays, purely leptonic decays, constraints on V_{td}).* Conveners: Aida El-Khadra (U. of Illinois), Wolfgang Altmannshofer (Fermilab), Mikihiro Nakao (KEK), Gaia Lanfranchi (CERN/INFN Frascati).
- *WG IV: Mixing and mixing-related CP violation in the B system (ΔM , $\Delta\Gamma$, ϕ for B_s , ϕ_1/β , ϕ_2/α , ϕ_3/γ).* Conveners: Alexander Lenz (CERN), Paride Paradisi (Munich Technical U.), Adrian Bevan (U. of London), Stephanie Hansmann-Menzemer (U. Heidelberg).
- *WG V: Direct CP violation (including ϕ_3/γ from $B \rightarrow DK$, DCPV effects in charmless hadronic $B_{(s)}$ decays).* Conveners: Guido Bell (U. Berne), Anton Poluektov (U. Warwick/BINP Novosibirsk).
- *WG VI: Top production and decays (including single top and top pair production; forward-backward and charge asymmetries; constraints on FCNC; searches for CPV; direct measurements of V_{td} , V_{ts} , V_{tb}).* Conveners: Jernej Kamenik (U. Ljubljana), Seung Lee (KAIST Korea), Tom Schwarz (U. Michigan).
- *WG VII: Mixing and CP violation in the D system (x , y , $|q/p|$, ϕ , x_{12} , y_{12} , ϕ_{12}).* Conveners: Svjetlana Fajfer (U. Ljubljana), Alexey Petrov (Wayne State U.), Ray Cowan (MIT), Matthew Charles (U. Oxford).

Working group conveners were responsible for choosing topics to be covered within their sessions, selecting speakers, and editing their speakers' conference proceedings (see below).

The overall workshop organization and all logistical arrangements were done by three committees:

- The Program Committee (19 members) was responsible for deciding upon working group topics and conveners, planning the schedule for plenary and parallel sessions, choosing and inviting plenary speakers, and assigning meeting rooms.
- The International Advisory Committee (21 members) was responsible for advising the Program Committee regarding appropriate plenary speakers, working group conveners, and topics to cover.
- The Local Organizing Committee (9 members) was responsible for making all local arrangements concerning lodging, dining, meeting rooms, audio-visual equipment, coffee breaks, etc.

The members of the Program Committee and International Advisory Committee were internationally known leaders in their subfields. The members of the Local Organizing Committee were faculty members and staff at the University of Cincinnati.

The first day of the workshop was held in Tangeman University Center on the campus of the University of Cincinnati. The morning sessions consisted of plenary talks, and the afternoon sessions consisted of parallel talks organized by working groups. The subsequent two days were held in downtown Cincinnati at the Westin Hotel and Conference Center. These sessions consisted exclusively of parallel talks organized by working groups. The final morning of the workshop was devoted to plenary talks by working group conveners, summarizing the results presented in their respective parallel sessions. There were also four plenary talks given by theorists, presenting various models of new physics. These final sessions were held at the Westin Conference Center.

The agenda and speakers for all plenary sessions were as follows:

	Saturday September 29 (UC)	Tuesday October 2 (Westin)
Opening Plenary I 9:00 am - 10:45 am	Welcome Raman Sundrum: Flavor Physics Beyond the Standard Model Tim Gershon: What We've Learned from Experiments Gilad Perez: What We Learn from the Top Quark	
Opening Plenary II 11:05 am - 12:50 am	Shoji Hashimoto: Status and Prospects for the Lattice Michael Roney: Future Prospects at e^+e^- Machines Marie-Helene Schune: Future Prospects at the LHC Robert Tschirhart: Current and Future Kaon Experiments	
New Physics Plenary 11:00 am - 12:45 pm		Michele Pappucci: The Case for SUSY Kaustubh Agashe: The Case for LFV Andreas Weiler: The Case for Exotica Carlo Dallapiccola: Searches for NP at the Energy Frontier
Closing Plenary I 2:00 pm - 3:40 pm		WG I Summary WG II Summary WG III Summary WG IV Summary
Closing Plenary II 4:00 pm - 5:30 pm		WG V Summary WG VI Summary WG VII Summary

The schedule for the parallel sessions was as follows:

		Saturday 29 September (UC)		Sunday September 30 (Westin)				Monday October 1 (Westin)		Tuesday October 2 (Westin)	
		2:00-4:00	4:30-6:30	8:30-10:30	11:00-1:00	2:00-4:00	4:30-6:30	8:30-10:30	11:00-1:00	8:30-10:30	11:00-12:45
WG I	(2)	✓					✓				
WG II	(4)		✓	✓	✓				✓	✓	
WG III	(5)		✓		✓	✓ (w/WG VI)		✓		✓	
WG IV	(5)	✓	✓		✓		✓		✓		
WG V	(3)			✓		✓		✓			
WG VI	(5)	✓		✓		✓ (w/WG III)		✓		✓	
WG VII	(3)			✓			✓		✓		
New Physics	(1)										✓

There was one joint parallel session, which was held between WG III and WG VI. A total of 150 talks were given at the workshop. The total number of conference attendees was 182, which was the highest to-date for this workshop series. Among the registered participants, 88 came from outside the US, mostly from Europe and Asia, and 22 were graduate students.

Social Program

In addition to the scientific program, there was also a social program. This consisted of three events:

- A welcoming reception was held on Friday, September 28th from 6:00-8:30 pm at the Westin Hotel and Conference Center.
- A banquet was held on Sunday evening, September 30th from 7:00-10:00 pm at the Contemporary Arts Center in downtown Cincinnati.
- An excursion was held on Monday afternoon, October 1. Conference attendees could choose between two options: a boat ride on an historic paddlewheel steamer on the Ohio River; or a tour of the Buffalo Trace Bourbon Distillery in Frankfort, Kentucky, followed by a bourbon tasting.

Proceedings

The workshop proceedings were published via the Electronic Conference Proceedings Archive “eConf” hosted at SLAC (<http://www.slac.stanford.edu/econf/>). The eConf system collects together papers posted to the arXiv preprint server (<http://arxiv.org/>). Of the 150 talks given at the workshop, 91 were written up and published in the Proceedings. This fraction is consistent with that of most workshops in high-energy physics. Parallel session contributions were reviewed/edited by working group conveners before posting to the arXiv server, while plenary session contributions were reviewed/edited by members of the Program Committee.

Budget

The workshop was sponsored by the University of Cincinnati Office of the Provost, University of Cincinnati Dean of McMicken College of Arts and Sciences, University of Cincinnati Physics Department, and the U.S. Department of Energy. The registration fee was \$350 for Ph.D. physicists and \$200 for graduate students. We gave one complimentary registration, which went to our first plenary speaker Dr. R. Sundrum (he could not stay for the workshop). The overall budget was as follows:

Income:

Registration fees	54815.
US DOE	10000.
Provosts Office	3500.
Dean McMicken	2200.
Physics Department	12045.33

Total	82560.33
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Expenses:

Food/reception	46078.27
Marketing	1342.10
Facility rental, A/V	16024.35
Staffing	185.59
Conference management fee	13500.
Misc.	5430.02
Total	82560.33

Conclusion

The 7th International Workshop on the CKM Unitarity Triangle, hosted by the University of Cincinnati, was a big success. The attendance was the highest of all CKM workshops to-date; the number of theorists attending was the highest to-date; the number of talks given was the highest to-date; and the planning was executed without any logistical difficulties and on budget. The number of written contributions posted to the arXiv preprint server (<http://arxiv.org/>) for the Proceedings was also relatively high. It was decided by the Program Committee to hold the next CKM workshop (the eighth in the series) at the University of Vienna in September 2014.