EUNIL WON

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Personal information

Current position: Professor of physics, Korea University
Sex: male
Marital status: married, 3 children
Email: eunilwon@korea.ac.kr, eunil@hep.korea.ac.kr
Personal web site: http://particle.korea.ac.kr
Lab web site: http://hep.korea.ac.kr

Education

- Ph.D in particle physics, University of Rochester, NY USA, 1997
  under the supervision of Thomas Ferbel, with the title of thesis
  Top-quark production in multi-jet final states
- M.A. in particle physics, University of Rochester, NY, 1995
- B.S. in physics, Korea University, Seoul Korea, 1992

Employment

- 2004 - Now: Professor, Korea University (2004-2007: Assistant, 2007-2013: Associate, 2013 - Now: Professor of Physics)
- 2018 - 2019: Visiting Scientist at IAC in Spain
- 2014 - 2015: Guest Scientist of CAPP/IBS at KAIST
- 2007 - 2008: Sabbatical leave at Fermilab in US as an international fellow
- 2002 - 2004: Research Associate, Harvard University
- 2000 - 2002: Postdoctoral fellow, BK21 Physics division, Seoul National University
- 1999 - 2000: Postdoctoral fellow, KEK
- 1997 - 1999: Postdoctoral fellow, Research Institute for Basic Sciences, Seoul National University (military service)

Professional Services

- 2017 - Now: Korean representative of Linear Collider Board under ICFA
- 2016 - 2018: The Deputy Dean of the Science College, Korea University
- 2014 - Now: Korean ILC task force team leader
- 2012 - Now: Korean Detector Technology Develop convenor for Asia Forum for Accelerators and Detectors
- 2012 - 2013: Team leader for the fundamental science case study utilizing RISP/IBS
- 2011 - 2013: Belle-II Institutional Board Chair
- 2009 - Now: Belle-II Executive Committee member
- 2003 - 2004: BaBar DCH trigger commissioner
- 1999 - 2000: Belle DST production manager

Refereeship

- Physical Review Letters/Physical Review D
- J. of Instrumentation
- J. of High Energy Physics

Academic Honors

2008: Fermilab International Fellowship
1993: Fellowship from Korea Foundation for Advanced Studies
(`http://www.kfas.or.kr`)
1992: Valedictorian of Korea University
1990 - 1992 : Baek Un Fellowship (Department of Physics, Korea University)

Research Interests

I am generally interested in experimental study of the CP violation in B and D meson systems. To carry it out, I have been working on the Belle experiment that is located in KEK/Japan from 1997. My group published $\mathcal{O}(10)$ PRL/PRD journal papers as 1st or corresponding authors in last 10 years and one of them is a half-theoretical. This project is going to be upgraded to collect 50 times more data to address the question of CP violation even further. My group is responsible for the implementation of a 3-dimensional tracking system in the level one trigger stage where hugh FPGA based computations are required. This project is to be finished in the year of 2019 when the drift chamber for the Belle II experiment is ready to roll in.

As the Belle experiment was running stable, I got interested in experimental cosmology. I am currently working on a ground based telescope project called GroundBird to detect B-mode of the CMB polarization, which can be a smoking gun level discovery of the inflation model of our universe. This project happened also to be located in KEK/Japan. Our group is working on the focal plane optics, a small R&D on the superconducting film based resonator (MKID: Microwave Kinetic Inductance Detector) for the photon detection, and the readout electronics in the frequency domain.

My hardware experience includes FPGA programming, analog/digital microelectronics (or ASIC), DAQ system, and superconducting thin film resonator development.

Major Publications

- Phys. Rev. D. **99**, 011104(R) (2019), *Search for CP violation with kinematic asymmetries in the $D^0 \to K^+K^-\pi^+\pi^-$ decay*, **E. Won (corresponding)**, for the Belle collaboration.
- Nucl. Inst. and Meth. A 883, 83-89 (2018), *A software framework for pipelined arithmetic algorithms in field programmable gate arrays*, **E. Won (corresponding)**.
- Phys. Rev. D. **94**, 092006 (2016), *Search for a dark vector gauge boson decaying to $\pi^+\pi^-$ using $\eta \to \pi^+\pi^-\gamma$ decays*, **E. Won (first, corresponding)**, for the Belle collaboration.
- Phys. Rev. Lett. **112**, 111801 (2014), *Observation of $D^0 - \bar{D}^0$ mixing in e^+e^- collisions*, **E. Won (corresponding)**, for the Belle collaboration.
- Journal of High Energy Physics, **02** (2013) 098, *Search for CP Violation in the Decay D^+ to K_SK^+*, **E. Won (corresponding)**, for the Belle collaboration.
- Phys. Rev. Lett. **109**, 021601 (2012), *Evidence for CP Violation in the Decay D^+ to $K_S\pi^+$*, **E. Won (corresponding)**, for the Belle collaboration.

- Phys. Rev. D. **84**, 111501(R) (2011), *Effect of nuclear interactions of neutral kaons on CP asymmetry measurements*, **E. Won (corresponding)**, B. R. Ko, B. Golob, P. Pakhlov.
- Phys. Rev. Lett. **107**, 221801 (2011), *Observation of* $D^+ \to K^+ \eta^{(\prime)}$ *and Search for CP Violation in* $D^+ \to \pi^+ \eta^{(\prime)}$ *Decays*, **E. Won (1st author)** for the Belle collaboration.
- Phys. Rev. Lett. **106**, 211801 (2011), *Search for CP Violation in the Decays* D^0 *to* K^0_S P^0, **E. Won (corresponding)** for the Belle collaboration.
- Phys. Rev. D. **83**, 071101 (2011), *Measurement of the decay* $B^0 \to \pi\ell\nu$ *and determination of* $|V_{ub}|$, **E. Won (corresponding)** for the Belle collaboration.
- Phys. Rev. Lett. **104**, 181602 (2010), *Search for CP violation in the decays* $D^+_S \to K^0_S\pi+$ *and* $D^+_S \to K^0_S K^+$, **E. Won (corresponding)** for the Belle collaboration.
- Phys. Rev. D. **80**, 111103 (2009), *Measurement of* $D^+ \to K^0_S K^+$ *and* $D^+_S \to K^0_S\pi^+$ *branching ratios*, **E. Won (1st author)**, for the Belle collaboration.
- Phys. Rev. Lett. **102**, 221802 (2009), *Observation of the Doubly Cabibbo-Suppressed Decay* $D^+_S \to K^+K^+\pi^-$, **E. Won (corresponding)** for the Belle collaboration.
- Nuclear Science, IEEE Transactions on Volume 55, Issue 1, Feb. 2008 Page(s):122 - 125, *Upgrade of the Level 1 Global Trigger System in the the Belle Experiment*, **E. Won (1st author)**.
- Jour. of Comp. Physics, 227/5, 2970 (2008), *Precise Numerical Solutions of Potential Problems Using Crank-Nicolson Method*, **E. Won (corresponding)**.
- Nucl. Inst. and Meth. A 581, 816 (2007), *A Hardware Implementation of Artificial Neural Network Using Field Programmable Gate Arrays*, **E. Won (single author)**.
- Other papers can be found from `http://inspirehep.net/author/E.Won.1` (866 entries as of 2015).

원은일

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개인정보

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개인 누리집: http://particle.korea.ac.kr
연구실 누리집: http://hep.korea.ac.kr

학사

- 박사학위: 1997년 입자물리학 실험, 미국 로체스터 대학
  지도교수: Thomas Ferbel
  학위제목: *Top-quark production in multi-jet final states*
- 석사학위: 1995년 입자물리학 실험, 미국 로체스터 대학
- 학사학위: 1992년 물리학, 고려대학교

경력사항

- 2004 - 현재: 고려대학교 물리학과 교수 (2004-2007: 조교수, 2007-2013: 부교수, 2013 - Now: 정교수)
- 2018 - 2019: 스페인 카나리천체물리연구소 방문과학자
- 2014 - 2015: 카이스트 액시온및극한상호작용물리연구단 초빙과학자
- 2007 - 2008: 미국 페르미 연구소 국제펠로우
- 2002 - 2004: 미국 하바드 대학교 연구원
- 2000 - 2002: 서울대학교 BK21 연구원
- 1999 - 2000: 일본 국립가속기연구소 연구원
- 1997 - 1999: 서울대학교 기초과학연구원 연구원 (병역특례)

전문 활동

- 2017 - Now: 국제미래가속기협의회/선형가속기이사회의 한국대표
- 2016 - 2018: 고려대학교 이과대학 부학장
- 2014 - Now: 한국 선형가속기 태스크포스 대표
- 2012 - Now: 아시안가속기포럼 검출기분야 좌장
- 2012 - 2013: 중이온가속기 이용 기초과학 연구 대표
- 2011 - 2013: 벨2 국제공동실험 전체 기구장
- 2009 - 2019: 벨2 국제공동실험 전체 이사회의 한국 대표
- 2003 - 2004: 바바 국제공동실험 가스검출기 트리거 운영책임자
- 1999 - 2000: 벨 국제공동실험 데이터생산 운영책임자

논문 심사 경력

- Physical Review Letters/Physical Review D
- J. of Instrumentation
- J. of High Energy Physics

Academic Honors

2008: 미국 페르미연구소 국제펠로우
1993: 한국고등교육재단 해외장학생
(`http://www.kfas.or.kr`)
1992: 고려대학교 최우수 졸업생
1990 - 1992 : 백운장학금 (고려대학교 물리학과)

연구분야

저는 일반적으로 B, D 중간자계의 CP 깨짐 현상에 대하여 지대한 관심이 있습니다. 이를 위하여 1997년부터 일본 국립가속기연구소에 소재한 벨 국제공동실험에 참여해 왔고 지금까지 대략 10년 동안 $\mathcal{O}(10)$ PRL/PRD 논문을 주저자 또는 교신저자로 발간해 왔고 이 중 하나는 반쯤은 이론 논문으로 생각할 수 있습니다. 이 벨 실험은 약 50배의 데이터를 더 모아 CP 깨짐 현상을 좀더 심층적으로 알아볼 것이고 제 연구실에서는 3차원 궤적 트리거 연구를 하고 있습니다. 이는 대용량의 FPGA을 이용한 매우 복잡한 계산을 신속하게 해야 하는 것으로 2019년에 실험이 시작됩니다.

벨 국제공동실험이 안정적으로 운용됨에 따라 저는 관측우주론 쪽에도 관심을 기울여 현재는 우주배경복사의 B 모드를 측정하려는 지상 망원경 프로젝트에(GroundBird) 일하고 있고 이는 우주 초기 인플레이션 우주론이 정말로 일어났을 것인가에 대한 절대적 증거를 줄 수 있는 중요한 실험으로 이해하고 있습니다. 최근에는 망원경 제작이 완료되어 2019년 스페인 카나리천체물리연구소에 옮긴 후 관측을 시작하는 단계입니다.

주요 논문

- Phys. Rev. D. **99**, 011104(R) (2019), *Search for CP violation with kinematic asymmetries in the $D^0 \to K^+K^-\pi^+\pi^-$ decay*, **E. Won (corresponding)**, for the Belle collaboration.
- Nucl. Inst. and Meth. A 883, 83-89 (2018), *A software framework for pipelined arithmetic algorithms in field programmable gate arrays*, **E. Won (corresponding)**.
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- Phys. Rev. Lett. **109**, 021601 (2012), *Evidence for CP Violation in the Decay D^+ to $K_S\pi^+$*, **E. Won (corresponding)**, for the Belle collaboration.
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- Phys. Rev. Lett. **107**, 221801 (2011), *Observation of $D^+ \to K^+\ \eta^{(\prime)}$ and Search for CP Violation in $D^+ \to \pi^+\ \eta^{(\prime)}$ Decays*, **E. Won (1st author)** for the Belle collaboration.
- Phys. Rev. Lett. **106**, 211801 (2011), *Search for CP Violation in the Decays D^0 to $K^0_S\ P^0$*, **E. Won (corresponding)** for the Belle collaboration.
- Phys. Rev. D. **83**, 071101 (2011), *Measurement of the decay $B^0 \to \pi\ell\nu$ and determination of $|V_{ub}|$*, **E. Won (corresponding)** for the Belle collaboration.
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- Phys. Rev. D. **80**, 111103 (2009), *Measurement of* $D^+ \to K^0_S K^+$ *and* $D^+_S \to K^0_S \pi^+$ *branching ratios*, **E. Won (1st author)**, for the Belle collaboration.
- Phys. Rev. Lett. **102**, 221802 (2009), *Observation of the Doubly Cabibbo-Suppressed Decay* $D^+_S \to K^+ K^+ \pi^-$, **E. Won (corresponding)** for the Belle collaboration.
- Nuclear Science, IEEE Transactions on Volume 55, Issue 1, Feb. 2008 Page(s):122 - 125, *Upgrade of the Level 1 Global Trigger System in the the Belle Experiment*, **E. Won (1st author)**.
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