

Proceedings of the International Workshop on e^+e^-
collisions from ϕ to ψ (**PHIPSI09**)

Beijing October 13–16, 2009

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International Workshop on e⁺e⁻ collisions from Phi to Psi
Oct. 13-16, 2009, IHEP, Beijing



FOREWORD

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(for the PHIPSI09 Local Organizing Committee)

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The “International Workshop on e^+e^- collisions from phi to psi” (PHIPSI09), was held at Institute of High Energy Physics (IHEP), Chinese Academy of Sciences (CAS), Beijing, China, from Tuesday, October 13 to Friday, October 16 2009. This is the seventh workshop in a series, which started in Karlsruhe in 1996 and continued in Novosibirsk (1999), SLAC (2001), Pisa (2003), Novosibirsk (2006), and Frascati (2008), carrying now the name “From Phi to Psi” first used at the Novosibirsk workshop in 1999. The goal of the Workshop is to discuss in detail the state of the art of various problems in hadronic physics at e^+e^- colliders from low to high energy and the potential of existing and future facilities.

The topics of the workshop include (1) R measurements and implications for theory; (2) muon g-2: experiments versus theoretical calculations; (3) radiative corrections; (4) meson and baryon form factors and OZI rule; (5) light and heavy spectroscopy; (6) tau-lepton physics; (7) gamma-gamma collision physics; (8) flavor physics; (9) quarkonium decays; and (10) machines and detectors.

There was a satellite meeting on radiative corrections and luminosity measurements followed the Workshop on Oct. 17, 2009. The written of a comprehensive review on the achievements, the problems, and the plans on the precision measurement of the hadronic cross sections at low energy and the related Monte Carlo tools were discussed in detail.

We thank all the participants and the international advisory committee for making a very successful workshop.

The workshop was sponsored by the Chinese Center for Advanced Science and Technology (CCAST), the National Natural Science Foundation (NNSF), the Ministry of Science and Technology of China, and the Institute of High Energy Physics of Chinese Academy of Sciences.

List of Talks

Opening Address

Hesheng Chen (IHEP, Beijing)

Session 1. Spectroscopy

Chaired by Weiguo Li (IHEP, Beijing) and Bingsong Zou (IHEP, Beijing)

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|---|---|
| XYZ particles at Belle | Chengping Shen (University of Hawaii) |
| Charmonium spectroscopy and decay at CLEO-c | Helmut Vogel (CMU) |
| Charmonium results from BESIII | Ping Rong-Gang (IHEP, Beijing) |
| KLOE results on scalar and pseudoscalar meson | Paolo Gauzzi (INFN) |
| Recent results on hadron spectroscopy from BESIII | Klaus Goetzen (GSI Darmstadt) |
| Charmed meson and baryon spectroscopy at Belle | Henryk Palka (INP, PAS) |
| XYZ particles at BaBar | Elisabetta Prencipe (LAPP, University of Savoie and CNRS) |
| Recent results from the KEDR detector | A. Blinov (BINP) |

Session 2. R measurements and implications for theory

Chaired by Michel Davier (LAL-Orsay) and

Bradley Lee Roberts (Boston University)

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| e^+e^- to charm cross sections via ISR | Galina Pakhlova (ITEP) |
| e^+e^- to hadrons via ISR | Evgeni Solodov (BINP) |
| Measurements of R with CMD-3 at VEPP-2000 | V. Logashenko (BINP) |
| How to extract precise values for α_s and m_c from e^+e^- data | J. H. Kuehn (U. Karlsruhe) |
| Study of the process e^+e^- to $\pi^+\pi^-\pi^0$ below 1 GeV | Alexey Kharlamov (BINP) |
| KLOE measurement of the pion form factor | Stefan E. Mueller (IEKP) |
| Pion form factor from ISR at BaBar | Wenfeng WANG (University of Notre Dame) |

Session 3. Muon g-2

Chaired by Evgeni Solodov (BINP) and Bradley Lee Roberts (Boston University)

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| VMD global fit improvement to the estimate of g-2 | Maurice Benayoun (Universites Paris 6/7) |
| Review on hadronic LbL contribution to g-2 | Andreas Nyffeler (Harish-Chandra Research Institute) |
| Progress in IB corrections | Gabriel Lopez Castro (Cinvestav) |
| Review on lowest order hadronic contribution to g-2 | Michel Davier (LAL) |
| Update of g-2 of the muon and delta alpha | Thomas Teubner (University of Liverpool) |
| The muon g-2 discrepancy: errors or new physics? | Massimo Passera (Padova) |
| Status of the Fermilab g-2 project | Bradley Lee Roberts (Boston University) |
| Future g-2 measurement at KEK | Tsutomu Mibe (KEK) |

Session 4. Flavour physics

Chaired by Brian Meadows (U. Cincinnati) and Graziano Venanzoni (LNF)

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| Results from NA48 on kaon decays | Cristina Morales (University of Mainz) |
| KLOE measurement of $K_{e2}/K_{\mu 2}$ and of K to e nu gamma | Aleksiej Sibidanov (BINP) |
| Can CPT symmetry be tested with K^0 versus $\bar{K}^0$ to $\pi^+\pi^-\pi^0$ decays | Zhi-zhong Xing (IHEP, Beijing) |
| Recent results on strangeness, charm and beauty production at HERA | Shuangshi Fang (DESY) |
| D and D_s semileptonic decays at CLEO-c | Peter Zweber (University of Minnesota) |
| Charm hadronic decays and quantum correlations at CLEO-c | Roy Briere (Carnegie Mellon University) |
| $D\bar{D}$ mixing and other charm results at Belle | Li Zhao (USTC) |
| $D\bar{D}$ mixing and other charm results from Babar | Brian Meadows (U. Cincinnati) |
| Charm program at BESIII | Gang Rong (IHEP, Beijing) |

Session 5. two-photon physics

Chaired by Henryk Czyz (U. of Silesia)

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| Gamma gamma physics with KLOE | Federico Nguyen (IFS) |
| Measurement of two-photon processes at Belle | Hideyuki Nakazawa (National Central University) |
| Nature of light scalars through photon-photon collisions | Nikolay Achasov (Sobolev Inst. Mathematics) |
| Measurements of $\gamma\gamma^* \rightarrow \pi^0$ and η_c transition form factors at BaBar | Vladimir Druzhinin (BINP) |
| Exclusive production in gamma-gamma collisions and J/ψ decays | V. Chernyak (BINP) |

Session 6. Quarkonium decays

Chaired by Roy Briere (Carnegie Mellon University)

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| Measurement of $J/\psi \rightarrow \eta_c \gamma$ at KEDR | Vladimir Malyshev (BINP) |
| Measurement of J/ψ leptonic widths with the KEDR detector | Andrei Shamov (BINP) |
| Isospin violating mechanisms in quarkonium hadronic decays | Qiang Zhao (IHEP, Beijing) |
| Study $a_0(980)$ - $f_0(980)$ mixing from charmonium decays | Jia-Jun Wu (IHEP, Beijing) |
| Strong and electromagnetic J/ψ and $\psi(2S)$ decays into pion and kaon pairs | Henryk Czyz (U. Silesia) |

Session 7. Form factors and OZI rule

Chaired by Achim Denig (U. Mainz)

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| Nucleon form factors via ISR | Rinaldo Baldini Ferroli (INFN-Lab. Naz. Frascati) |
| Form factors measurement with Panda at Fair | Egle TOMASI-GUSTAFSSON (CEA-Saclay) |
| Two photon exchange contribution to proton form factors | Haiqing Zhou (Southeast University) |

Time-like form factors and dispersion relations	Simone Pacetti (Enrico Fermi Center and LNF-INFN)
Session 8. Radiative corrections	Chaired by Johann Kuehn (Univ. Karlsruhe)
“Working group on rad. corr. and MC generators for low energies”	Henryk Czyz (U. of Silesia)
Radiative corrections in e^+e^- and MC generators	G. Fedotovitch (BINP)
Status and accuracy of Monte Carlo generators for luminosity measurement	Guido Montagna (INFN)
News of PHOTOS MC for $\gamma^* \rightarrow \pi^+\pi^-(\gamma)$ and $K^+ \rightarrow \pi^+\pi^-e^+\nu_e(\gamma)$	Qingjun Xu (IFJ-PAN Cracow)
Session 9. tau physics	Chaired by Johann Kuehn (Univ. Karlsruhe)
Tau lepton decays	Simon Eidelman (BINP)
Rare decays of tau lepton at Belle	Markus Bischofberger (Nara Women’s University)
Rare tau decays from BaBar	George Lafferty (Univ. of Manchester)
Session 10. Machines and detectors	Chaired by Simon Eidelman (BINP)
Beam energy calibration system at BEPCII	Xiao-Hu Mo (IHEP, Beijing)
SuperBelle experiment	Pasha Pakhlov (ITEP)
Novosibirsk tau-charm factory project with crab waist	E. Levichev (BINP)
KLOE2 status	Graziano Venanzoni (LNF)
Super flavour factory in Italy	David Hitlin (CIT)
Machines and detectors at BINP, Novosibirsk	Yu. Tikhonov (BINP)

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