

Curriculum Vita

Zhengguo Zhao

Education

Ph.D., Experimental Particle Physics, University of Science and Technology of China (USTC), 1988.

M.S., Experimental Particle Physics, USTC, 1984.

B.S., Experimental Particle Physics, USTC, 1981.

Professional Career, Responsibilities and Service

2001-present: Research Scientist, Research Scientist, Physics Department., the University of Michigan

1998-2001: Professor of physics, Institute of High Energy Physics (IHEP), Chinese Academy of Sciences (CAS). Spokesperson of BES Collaboration. Director of Physics Division One at IHEP of CAS.

1997-1998: Associate professor, IHEP of CAS. Physics Analysis Coordinator of BES Collaboration. Group leader of BES calorimeter group.

1990-1997: Post Doctor, Research Associate, Institute of Particle Physics (IPP), Swiss Federal Institute of Technology, Zurich Switzerland (ETHZ).

1988-1990: Post Doctor, IHEP of CAS, Beijing, China.

Honors and Awards

2005 Nature Science Prize of China (second class)

The prize is awarded to the project "Measurement of R values in 2-5 GeV".

2004 Outstanding Achievement of Science and Technology Prize of Beijing.

This award is for the project "Measurement of R values in 2-5 GeV".

2003 Outstanding Science and Technology Achievement Prize of the Chinese Academy of Sciences

Awarded to the "Measurement of R values between 2-5 GeV with BES at BEPC". A golden medal is awarded to me as the first contributor to this project.

2001 CAS Outstanding Young Scientist Award.

1998 – 2001: Chinese National Science Foundation Outstanding Young Scientist

2000: CAS 100 Talent Program Excellent Team Leader Award.

Research Area and Experience

(A) Recent Research Area: Experimental High Energy Physics

1. ATLAS Experiment (2001-present)

- Construction of endcap MDT detector at the University of Michigan.
- Diboson production and triple gauge boson couplings.

2. D0 Experiment (2001-2005)

- Level two trigger of the D0 Pre-shower Detector. Implemented a fast algorithm to find the cluster, send the data to serve the D0 L2 trigger.
- Measurement of the fragmentation function and second binomial moment with D0 Run II data.

3. BES Experiment (1997-2001)

- In charge of the Beijing Spectrometer (BES) at Beijing Electro-Positron Collider (BEPC). Successfully did the R scan in 2-5 GeV. Collected 58 million J/ψ events for the systematic study of light hadron spectroscopy and search for new resonances and rare decays
- Preparation for BESIII design, R&D and construction. Drafting the first version of 'The BES III Physics and Design'.
- Measurement of R-value, a ratio of the production cross section of hadron vs. dimuon from e^+e^- annihilation, in energy region of 2-5 GeV. Measurement of momentum spectrum of the hadronic states in 2-5 GeV with BES R scan data (served as the project leader 1997-2001).

(B) Previously Research Area: Experimental High Energy and Participle Physics

1. Pionic atom experiment—ETHZ-PSI-Neuchetel Collaboration (1990-1997)

- *A measurement of the strong interaction shift and width of the 1S level in pionic hydrogen and deuterium (done at [Paul Scherrer Institut](#) in Switzerland)*
- *Search for 33.9 MeV neutral particle in pion decay*
- *π^+p 180° backscattering experiment*

2. BES Experiment (1988-1990)

- Monte Carlo simulation, track finding and fitting of the Central Drift Chamber.
- Measurement of the J/ψ resonance parameters.

3. Measurement of the rest mass of anti-electron neutrino with tritium beta ray spectroscopy (1982-1988)

- Building up iron free double focusing beta spectrometer.
- Design and making of the proportional counter with very thin window and making of the large area tritium source.
- Design and making of the laser equipment pumped by ^3H β decay.

Professional Activity and Service

- Editor of *Journal of Modern Physics* (Particle and Field Section), 1998-present
- Adversary committee member for the *International Workshop on Hadronic Cross Section at Low Energy*, Pisa, Italy, October 8-11, 2003. Chairperson of the “Direct Measurement of R” session.
- Adversary committee member for the *8th International Conference on Instrumentation for Colliding Beam Physics*, Novosibirsk, Russia, February 28-March 6, 2002.
- Program Committee Member of “*The Ninth International Conference on Hadron Spectroscopy* (Hadron01-9th). Moscow, Russia, August 25-September 1, 2001.
- *Snowmass 2001* Working Group E2 (Electron-positron Colliders from the ϕ to the Z), Snowmass, USA, 2001. (Principal author of the report)
- Program Committee member of *International Conference on Heavy Flavor Physics*, Zhang-Jiajie, Hunan. China, 2001.
- Editor of *High Energy Physics and Nuclear Physics* (published in China), 1998-2001
- Standing member of Scientific Committee of IHEP of CAS, 1998-2001.
- Convener of *ICHEP2000* for Hadron Spectroscopy Sessions. Chair of the parallel session “Light and Heavy Quarks, Glueballs, Exotics), Osaka, Japan, 2000.
- Program Committee Member of *Hadron99* (Hadron99-8th), Beijing, China, 1999.
- Program Committee Member of *CLEOC Workshop-Physics in $3 < E_{cm} < 5\text{GeV}$* , Cornell University, USA, 1999.

Numbers of publications in total: ~200

Selected Publications (First Author, Lead Author, EB member or Major Contribution)

1. **Search for the rare decays $J/\psi \rightarrow D_s e^+ \nu$, $J/\psi \rightarrow D^0 \bar{e}^+ e^-$**
Phys.Lett.B639:418-423,2006.
2. **Search for supersymmetry via associated production of charginos and neutralinos in final states with three leptons.**
Phys.Rev.Lett.95:151805,2005.

3. **BESII detector simulation.**
Nucl.Instrum.Meth.A552:344-356,2005.
4. **Heavy quarkonium physics**
[N. Brambilla et al.](#) FERMILAB-FN-0779, CERN-2005-005, Dec 2004. 521pp.
Published as CERN Yellow Report, CERN-2005-005, Geneva: CERN, 2005. -487 p.
Top citation = 100+ (author for R value session)
5. **Search for the lepton flavor violation processes $J/\psi \rightarrow \mu\tau$ and $e\tau$**
Phys.Lett.B598:172-177,2004.
6. **Measurement of inclusive momentum spectra and multiplicity distributions of charged particles at $\sqrt{s} = 1-5$ GeV.**
Phys.Rev.D69:072002,2004
7. **Measurements of the mass and full width of the η_c meson.**
Phys.Lett.B555:174-180,2003.
8. **SEARCH FOR LEPTON FLAVOR VIOLATION PROCESS $J/\psi \rightarrow e \mu$.**
Phys.Lett.B561:49-54,2003
9. **A measurement of $\psi(2S)$ resonance parameters.**
Phys. Lett. B 550 (2002) 24-32.
10. **Report of Snowmass 2001 Working Group E2: Electron - positron colliders from the phi to the Z.**
[Zhen-guo Zhao et al.](#) SLAC-PUB-9337, FERMILAB-CONF-01-445, SNOWMASS-2001-E2001, Jan 2002. 24pp.
Report of Snowmass 2001 Working Group E2 APS / DPF / DPB Summer Study on the Future of Particle Physics (Snowmass 2001), Snowmass, Colorado, 30 Jun - 21 Jul 2001.
In the Proceedings of APS / DPF / DPB Summer Study on the Future of Particle Physics (Snowmass 2001), Snowmass, Colorado, 30 Jun - 21 Jul 2001, pp E2001.
11. **The pion nucleon scattering lengths from pionic hydrogen and deuterium.**
[H.C. Schroder et al.](#) 2001. Eur.Phys.J.C21:473-488,2001.
TOPCITE = 52
12. **The BES upgrade.**
Nucl.Instrum.Meth.A458:627-637,2001.
TOPCITE = 100+
13. **Measurements of the cross-section for $e^+ e^- \rightarrow$ hadrons at center-of-mass energies from 2-GeV to 5-GeV.**
Phys.Rev.Lett.88:101802,2002.
TOPCITE = 137
14. **The first measurement of $\text{Br}(\psi(2S) \rightarrow \tau^+ \tau^-)$**
Phys.Rev.D65 (2002) 052004.

15. **Precise measurement of spin-averaged $\chi(cJ)(1P)$ mass using photon conversions in $\psi(2S) \rightarrow \gamma\chi(cJ)$.**
Phys.Rev.D71:092002,2005.

International Conferences and Workshops in Recent years

- *MRPC, [9th ACFA ILC Physics and Detector Workshop & ILC GDE Meeting](#), Feb. 4-7, 2007, Beijing, China.*
- *Diboson production and triple gauge boson couplings. [9th ACFA ILC Physics and Detector Workshop & ILC GDE Meeting](#), Feb. 4-7, 2007, Beijing, China.*
- *Gauge boson pair production and triple gauge boson couplings at HLC (representing ATLAS and CMS Collaboration), International Conference of High Energy Physics, July 26-August 2, 2006, Moscow, Russia. (invited talk, representing ATLAS and CMS)*
- *Diboson Studies at ATLAS, North American ATLAS Higgs and Standard Model Workshop, Argonne April 27-29, 2006 Chicago, USA.*
- *ATLAS tracking chamber, ATLAS Review of 2004, Freiberg, Germany. (representing ATLAS Muon Spectrometer)*
- *Test of QCD in low energy below 5 GeV with BES R scan data, Quarkonium International Workshop on Quarkonium, August 2003, FNAL USA.*
- *R values in low energy e^+e^- annihilation—Present status and prospects*
Closing talk given at international workshop on hadronic cross section at low energy. October 2003, Pisa, Italy.
- *Final Result of R in 2-5 GeV and Test of QCD with BES R Scan Data, International Conference of High Energy Physics, July 24-August 3, 2002, Amsterdam*
- *CLEOC/CESRC and BESIII/BEPCII, BESIII Detector and Physics Workshop, July 2002, Beijing.*
- *New Frontier in Strong and Weak Physics: BESII/BESIII/BEPCII, “Snowmass 2001”, July 8-11, 2001, Snowmass, US*
- *BES: Recent Results and Future Plans, “ e^+e^- Physics at Intermediate Energy”, April 27-May 3, 2001, Stanford University, USA*
- *Physics at BES and Future Plans, “Workshop on Prospects for CLEO/CSER with $3 < E_{cm} < 5$ GeV”, May 5-7, 2001, Cornell University, USA*
- *BES Recent Results, “The 8th Asia Pacific Physics Conference”, August 7-10, 2000 Taipei.*
- *New R values in 2-5 GeV from BES at BEPC, “the XXXth International Conference on High Energy Physics”, July 27-August 2, 2000, Osaka (chair one session, convener)*

- *Recent results from BES*, “The 8th International Conference on Hadron Spectroscopy”, August 24-27, 1999, Beijing China
- *Beijing Advanced Tau-Charm Facility (BATCF) —BES’s future plan*. “Workshop on Light Hadron Spectroscopy”, CCAST(Chinese Center of Advanced Science and Technology), Beijing, May 1999.
- *R in low energy e^+e^-* “The XIX International Symposium on Lepton and Photon Interaction”, August 9-15, 1999 Stanford University, USA.
- *Measurement of R with BESII*, “The XXIVth International Conference on High Energy Physics”, July 23-30, 1998, Vancouver, Canada