

Huifeng Fu

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Education:

- ★ Jul. 2012: **Ph. D.**, Particle Physics and Nuclear Physics, Harbin Institute of Technology (HIT), China.
Dissertation: *Decays of Heavy Vector Quarkonia and B_q mesons*
- ★ Jul. 2007: **M. S.**, Particle Physics and Nuclear Physics, HIT, China.
Thesis: *Color Correlations in the Quark-Gluon Plasma*
- ★ Jul. 2004: **Bachelor of Engineering**, Industrial Design, HIT, China.

Research Experience:

Current research: Currently I am focusing on composite Higgs models where the Higgs boson is considered as a pseudo-Goldstone boson due to a spontaneously broken symmetry. I am trying to study the composite Higgs with the Bethe-Salpeter (BS) equation to see if we can gain more dynamical details.

Research as a PhD student: I mainly studied annihilations of ψ 's and Υ 's, some open flavor decays, and B (B_s , B_c) weak decays and their CP asymmetries with a Bethe-Salpeter model. The followings are brief descriptions of selected works of mine.

- * B_q ($q = u, d, s, c$) decays play important roles in studying CP violation and flavor physics. With the BS model, I estimated decay rates and CP asymmetries of B_q on many channels. For non-leptonic B_c decays, I also roughly estimated the least number of events needed to observe CP violations in the future experiments at LHC.
- * Quarkonia annihilating into photons and gluons provide a test on the description of the mesons and reveal information about α_s at the m_c or m_b scale. With the BS model, which covers some relativistic effects of (anti-)quarks in mesons, annihilation decay rates of ψ 's and Υ 's were estimated. It was found that they suffered sufficient relativistic corrections.
- * Open flavor decays of high excited heavy bottomonia lying above the $B\bar{B}$ threshold dominate their decay widths. Using the 3P_0 model with relativistic BS wave functions, OZI-allowed two-body decay widths of high excited Υ 's were estimated.
- * With my collaborator, I studied the elliptic flow in the heavy ion collision (Au+Au) at RHIC energy with data simulated by A Multiphase Transport Model.

Research as a graduate (master) student:

- * I studied the equation for two-quark correlation function in the BBGKY hierarchy in quark-gluon plasma and discussed the correlation due to the quark interaction with simplifications.

Programming Language and Softwares Used:

Fortran; Mathematica; PAW; Origin; LaTeX

Conferences, Courses and International Collaboration:

- * I participated the program "Projects of International Cooperation and Exchanges" and visited Professor C. S. Kim at Yonsei University in Seoul with Prof. G.-L. Wang *et. al.*, during Sep. to Oct. in 2010. **I gave a presentation on annihilations of ψ 's and Υ 's.**
- * The 5th "Mudanjiang" Collaboration workshop, Harbin, China (Sep. 2010)
- * The 4th Chinese TeV physics workshop, Tianjin, China (Aug. 2009)

- * The course of Prof. Tao Han from University of Wisconsin-Madison, USA: “The Standard Model and Physics beyond the Standard Model”, Harbin, China (2008)
- * The course of Prof. Wolfgang Nolting from Humboldt University, Germany: “Many- Body Problems in Solid State Physics”, Harbin, China (2007)

Teaching Experience:

- * Oct.-Dec. 2012, I tutored a student at the University of South Carolina on College Physics.
- * Sep. 2007-Jul. 2008, Mar. 2009-Jul. 2010, Teaching assistant in department of physics at HIT.
- * One semester in my undergraduate period, I tutored a middle school student on science.

Awards and Honors:

- * 2005-2006, HIT First-class scholarship
- * 2002-2003, HIT Excellent League Member

Publications:

- 1:** *Annihilation Rates of Heavy 1^{--} S-Wave Quarkonia in Salpeter Method*, **Hui-Feng Fu**, Xiang-Jun Chen and Guo-Li Wang, Phys. Lett. **B 692**, (2010) 312.
- 2:** *Probing Non-Leptonic Two-Body Decays of B_c Meson*, **Hui-Feng Fu**, Yue Jiang, C. S. Kim and Guo-Li Wang, J. High Energy Phys. **06**, (2011) 015.
- 3:** *Semi-Leptonic and Non-Leptonic B Meson Decays to Charmed Mesons*, **Hui-Feng Fu**, Guo-Li Wang, Zhi-Hui Wang and Xiang-Jun Chen, Chin. Phys. Lett. **28**, (2011) 121301.
- 4:** *The Strong Decays of Orbitally Excited B_{sJ}^* Mesons by Improved Bethe-Salpeter Method*, Zhi-Hui Wang, Guo-Li Wang, **Hui-Feng Fu** and Yue Jiang, Phys. Lett. **B 706**, (2012) 389.
- 5:** *Estimating Form Factors of $B_s \rightarrow D_s^{(*)}$ and their Applications to Semi-Leptonic and Non-Leptonic Decays*, X-J Chen, **H-F Fu**, C S Kim and G-L Wang, J. Phys. **G 39**, (2012) 045002.
- 6:** *OZI-Allowed Two Body Υ Decays in the 3P_0 Model with the Relativistic Wave Functions*, **Hui-Feng Fu**, Xiang-Jun Chen, Guo-Li Wang and Tian-Hong Wang, Int. J. Mod. Phys. **A 27**, (2012) 1250027.
- 7:** *B_c Decays to Heavy-Light Orbitally Excited Mesons*, Zhi-Hui Wang, Guo-Li Wang, **Hui-Feng Fu**, Yue Jiang, Int. J. Mod. Phys. **A 27**, (2012) 1250049.