

Bibliography

- [1] M. Tanabashi *et al.* (Particle Data Group), Phys. Rev. D **98**, 030001 (2018).
- [2] J. J. Dudek, R. G. Edwards, N. Mathur and D. G. Richards, “Charmonium excited state spectrum in lattice QCD”, Phys. Rev. D **77**, 034501 (2008).
- [3] S. Meinel, “The Bottomonium spectrum from lattice QCD with 2+1 flavors of domain wall fermions”, Phys. Rev. D **79**, 094501 (2009).
- [4] T. Burch, C. DeTar, M. Di Pierro, A. X. El-Khadra, E. D. Freeland, S. Gottlieb, A. S. Kronfeld, L. Levkova, P. B. Mackenzie and J. N. Simone, “Quarkonium mass splittings in three-flavor lattice QCD”, Phys. Rev. D **81**, 034508 (2010).
- [5] L. Liu, G. Moir, M. Peardon, S. M. Ryan, C. E. Thomas, P. Vilaseca, J. J. Dudek, R. G. Edwards, B. Joo and D. G. Richards (Hadron Spectrum Collaboration), “Excited and exotic charmonium spectroscopy from lattice QCD”, JHEP **07**, 126 (2012).
- [6] C. McNeile, C. T. H. Davies, E. Follana, K. Hornbostel and G. P. Lepage, “Heavy meson masses and decay constants from relativistic heavy quarks in full lattice QCD”, Phys. Rev. D **86**, 074503 (2012).
- [7] J. O. Daldrop, C. T. H. Davies and R. J. Dowdall (HPQCD Collaboration), “Prediction of the bottomonium D-wave spectrum from full lattice QCD”, Phys. Rev. Lett. **108**, 102003 (2012).
- [8] T. Kawanai and S. Sasaki, “Heavy quarkonium potential from Bethe-Salpeter wave function on the lattice”, Phys. Rev. D **89**, 054507 (2014).
- [9] T. Kawanai and S. Sasaki, “Interquark potential with finite quark mass from lattice QCD”, Phys. Rev. Lett. **107**, 091601 (2011).
- [10] Y. Burnier, O. Kaczmarek and A. Rothkopf, “Quarkonium at finite temperature: Towards realistic phenomenology from first principles”, JHEP **12**, 101 (2015).
- [11] M. Kalinowski and M. Wagner, “Masses of D mesons, D_s mesons and charmonium states from twisted mass lattice QCD”, Phys. Rev. D **92**, 094508 (2015).

-
- [12] Y. Burnier, O. Kaczmarek and A. Rothkopf, “In-medium P-wave quarkonium from the complex lattice QCD potential”, JHEP **10**, 032 (2016).
 - [13] D. Bećirević, G. Duplančić, B. Klajn, B. Melić and F. Sanfilippo, “Lattice QCD and QCD sum rule determination of the decay constants of η_c , J/ψ and h_c states”, Nucl. Phys. B **883**, 306 (2014).
 - [14] B. Colquhoun, R. J. Dowdall, C. T. H. Davies, K. Hornbostel and G. P. Lepage, “ Υ and Υ' Leptonic Widths, a_μ^b and m_b from full lattice QCD”, Phys. Rev. D **91**, 074514 (2015).
 - [15] N. Brambilla *et al.*, “QCD and Strongly Coupled Gauge Theories: Challenges and Perspectives”, Eur. Phys. J. C **74**, 2981 (2014).
 - [16] N. Brambilla *et al.*, “Heavy quarkonium: progress, puzzles, and opportunities”, Eur. Phys. J. C **71**, 1534 (2011).
 - [17] V. Lubicz, L. Riggio, G. Salerno, S. Simula and C. Tarantino (ETM Collaboration), “Scalar and vector form factors of $D \rightarrow \pi(K)\ell\nu$ decays with $N_f = 2 + 1 + 1$ twisted fermions”, Phys. Rev. D **96**, 054514 (2017).
 - [18] V. Lubicz, L. Riggio, G. Salerno, S. Simula and C. Tarantino (ETM Collaboration), “Tensor form factor of $D \rightarrow \pi(K)\ell\nu$ and $D \rightarrow \pi(K)\ell\ell$ decays with $N_f = 2 + 1 + 1$ twisted-mass fermions”, Phys. Rev. D **98**, 014516 (2018).
 - [19] L. Riggio, G. Salerno and S. Simula, “Extraction of $|V_{cd}|$ and $|V_{cs}|$ from experimental decay rates using lattice QCD $D \rightarrow \pi(K)\ell\nu$ form factors”, Eur. Phys. J. C **78**, 501 (2018).
 - [20] S. Aoki *et al.*, “Review of lattice results concerning low-energy particle physics”, Eur. Phys. J. C **77**, 112 (2017).
 - [21] G. C. Donald, C. T. H. Davies, J. Koponen and G. P. Lepage (HPQCD Collaboration), “ V_{cs} from $D_s \rightarrow \phi\ell\nu$ semileptonic decay and full lattice QCD”, Phys. Rev. D **90**, 074506 (2014).
 - [22] G. S. Bali, S. Collins, S. Dürr and I. Kanamori, “ $D_s \rightarrow \eta, \eta'$ semileptonic decay form factors with disconnected quark loop contributions”, Phys. Rev. D **91**, 014503 (2015).
 - [23] H. Garcilazo, A. Valcarce and J. Vijande, “Doubly heavy baryon spectra guided by lattice QCD”, Phys. Rev. D **94**, 074003 (2016).
 - [24] Z. S. Brown, W. Detmold, S. Meinel and K. Orginos, “Charmed bottom baryon spectroscopy from lattice QCD”, Phys. Rev. D **90**, 094507 (2014).
 - [25] M. Padmanath, R. G. Edwards, N. Mathur and M. Peardon, “Spectroscopy of doubly-charmed baryons from lattice QCD”, Phys. Rev. D **91**, 094502 (2015).
 - [26] C. Alexandrou, V. Drach, K. Jansen, C. Kallidonis and G. Koutsou, “Baryon spectrum with $N_f = 2 + 1 + 1$ twisted mass fermions”, Phys. Rev. D **90**, 074501 (2014).
-

-
- [27] P. Pérez-Rubio, S. Collins and G. S. Bali, “Charmed baryon spectroscopy and light flavor symmetry from lattice QCD”, Phys. Rev. D **92**, 034504 (2015).
 - [28] K. U. Can, G. Erkol, M. Oka and T. T. Takahashi, “Look inside charmed-strange baryons from lattice QCD”, Phys. Rev. D **92**, 114515 (2015).
 - [29] M. A. Shifman, A. I. Vainshtein and V. I. Zakharov, “QCD and Resonance Physics. Theoretical Foundations”, Nucl. Phys. B **147**, 385 (1979).
 - [30] W. E. Caswell and G. P. Lepage, “Effective Lagrangians for Bound State Problems in QED, QCD, and Other Field Theories”, Phys. Lett. B **167**, 437 (1986).
 - [31] G. T. Bodwin, E. Braaten and G. P. Lepage, “Rigorous QCD analysis of inclusive annihilation and production of heavy quarkonium”, Phys. Rev. D **51**, 1125 (1995), [Erratum: Phys. Rev.D55,5853(1997)].
 - [32] A. Pineda and J. Soto, “Effective field theory for ultrasoft momenta in NRQCD and NRQED”, Nucl. Phys. Proc. Suppl. **64**, 428 (1998), [,428(1997)].
 - [33] N. Brambilla, A. Pineda, J. Soto and A. Vairo, “Potential NRQCD: An Effective theory for heavy quarkonium”, Nucl. Phys. B **566**, 275 (2000).
 - [34] A. Chodos, R. L. Jaffe, K. Johnson, C. B. Thorn and V. F. Weisskopf, “A New Extended Model of Hadrons”, Phys. Rev. D **9**, 3471 (1974).
 - [35] E. Eichten, K. Gottfried, T. Kinoshita, K. D. Lane and T.-M. Yan, “Charmonium: The Model”, Phys. Rev. D **17**, 3090 (1978), [Erratum: Phys. Rev.D21,313(1980)].
 - [36] A. Martin, “A FIT of Upsilon and Charmonium Spectra”, Phys. Lett. **B93**, 338 (1980).
 - [37] C. Quigg and J. L. Rosner, “Quantum Mechanics with Applications to Quarkonium”, Phys. Rept. **56**, 167 (1979).
 - [38] P. C. Vinodkumar, J. N. Pandya, V. M. Bannur and S. B. Khadkikar, “A unified scheme for flavoured mesons and baryons”, Eur. Phys. J. A **4**, 83 (1999).
 - [39] J. N. Pandya and P. C. Vinodkumar, “Masses of S and P wave mesons and pseudoscalar decay constants using a confinement scheme”, Pramana **57**, 821 (2001).
 - [40] S. B. Khadkikar and P. C. Vinodkumar, “Confinement Models For Gluons”, Pramana **29**, 39 (1987).
 - [41] P. C. Vinodkumar, K. B. Vijayakumar and S. B. Khadkikar, “Effect of the confined gluons in quark quark interaction”, Pramana **39**, 47 (1992).
 - [42] P. C. Vinodkumar and S. B. Khadkikar, “Gauge constraints: A Probable basis for phenomenological confinement models”, Phys. Lett. B**329**, 81 (1994), [Erratum: Phys. Lett.B340,264(1994)].
-

-
- [43] W. Buchmuller and S. H. H. Tye, “Quarkonia and Quantum Chromodynamics”, Phys. Rev. D **24**, 132 (1981).
 - [44] C. Quigg and J. L. Rosner, “Quarkonium Level Spacings”, Phys. Lett. **B71**, 153 (1977).
 - [45] S. S. Gershtein, V. V. Kiselev, A. K. Likhoded and A. V. Tkabladze, “ B_c spectroscopy”, Phys. Rev. D **51**, 3613 (1995).
 - [46] A. K. Rai, R. H. Parmar and P. C. Vinodkumar, “Masses and decay constants of heavy-light flavor mesons in a variational scheme”, J. Phys. G **28**, 2275 (2002).
 - [47] A. Kumar Rai, P. C. Vinodkumar and J. N. Pandya, “Decay rates of quarkonia and potential models”, J. Phys. G **31**, 1453 (2005).
 - [48] A. K. Rai and P. C. Vinodkumar, “Properties of B_c meson”, Pramana **66**, 953 (2006).
 - [49] A. K. Rai, B. Patel and P. C. Vinodkumar, “Properties of $Q\bar{Q}$ mesons in non-relativistic QCD formalism”, Phys. Rev. C **78**, 055202 (2008).
 - [50] A. Parmar, B. Patel and P. C. Vinodkumar, “Two-Photon, Two-gluon and Radiative Decays of Heavy Flavoured Mesons”, Nucl. Phys. A **848**, 299 (2010).
 - [51] S. K. Choi *et al.* (Belle Collaboration), “Observation of a narrow charmonium - like state in exclusive $B^\pm \rightarrow K^\pm \pi + \pi - J/\psi$ decays”, Phys. Rev. Lett. **91**, 262001 (2003).
 - [52] B. Aubert *et al.* (BABAR Collaboration), “Study of the $B \rightarrow J/\psi K^- \pi^+ \pi^-$ decay and measurement of the $B \rightarrow X(3872)K^-$ branching fraction”, Phys. Rev. D **71**, 071103 (2005).
 - [53] B. Aubert *et al.* (BABAR Collaboration), “Study of $J/\psi \pi^+ \pi^-$ states produced in $B^0 \rightarrow J/\psi \pi^+ \pi^- K^0$ and $B^- \rightarrow J/\psi \pi^+ \pi^- K^-$ ”, Phys. Rev. D **73**, 011101 (2006).
 - [54] D. Acosta *et al.* (CDF Collaboration), “Observation of the narrow state $X(3872) \rightarrow J/\psi \pi^+ \pi^-$ in $\bar{p}p$ collisions at $\sqrt{s} = 1.96$ TeV”, Phys. Rev. Lett. **93**, 072001 (2004).
 - [55] R. Aaij *et al.* (LHCb Collaboration), “Observation of $X(3872)$ production in pp collisions at $\sqrt{s} = 7$ TeV”, Eur. Phys. J. C **72**, 1972 (2012).
 - [56] R. Aaij *et al.* (LHCb Collaboration), “Determination of the $X(3872)$ meson quantum numbers”, Phys. Rev. Lett. **110**, 222001 (2013).
 - [57] G. V. Efimov and M. A. Ivanov, “Confinement and Quark Structure of Light Hadrons”, Int. J. Mod. Phys. A **4**, 2031 (1989).
 - [58] G. V. Efimov and M. A. Ivanov, *The Quark confinement model of hadrons*, (IOP, Bristol1993).
-

-
- [59] S. Weinberg, “Elementary particle theory of composite particles”, Phys. Rev. **130**, 776 (1963).
 - [60] A. Salam, “Lagrangian theory of composite particles”, Nuovo Cim. **25**, 224 (1962).
 - [61] J. J. Aubert *et al.* (E598 Collaboration), “Experimental Observation of a Heavy Particle J ”, Phys. Rev. Lett. **33**, 1404 (1974).
 - [62] T. A. Armstrong *et al.* (E760 Collaboration), “Study of the χ_1 and χ_2 charmonium states formed in $p\bar{p}$ annihilations”, Nucl. Phys. B **373**, 35 (1992).
 - [63] M. Ablikim *et al.* (BESIII Collaboration), “Observation of the $\psi(1^3D_2)$ state in $e^+e^- \rightarrow \pi^+\pi^-\gamma\chi_{c1}$ at BESIII”, Phys. Rev. Lett. **115**, 011803 (2015).
 - [64] S. W. Herb *et al.*, “Observation of a Dimuon Resonance at 9.5-GeV in 400-GeV Proton-Nucleus Collisions”, Phys. Rev. Lett. **39**, 252 (1977).
 - [65] W. R. Innes *et al.*, “Observation of Structure in the Υ Region”, Phys. Rev. Lett. **39**, 1240 (1977), [Erratum: Phys. Rev. Lett. 39, 1640 (1977)].
 - [66] R. Mizuk *et al.* (Belle Collaboration), “Evidence for the $\eta_b(2S)$ and observation of $h_b(1P) \rightarrow \eta_b(1S)\gamma$ and $h_b(2P) \rightarrow \eta_b(1S)\gamma$ ”, Phys. Rev. Lett. **109**, 232002 (2012).
 - [67] J. P. Lees *et al.* (BABAR Collaboration), “Study of radiative bottomonium transitions using converted photons”, Phys. Rev. D **84**, 072002 (2011).
 - [68] S. Dobbs, Z. Metreveli, K. K. Seth, A. Tomaradze and T. Xiao, “Observation of $\eta_b(2S)$ in $\Upsilon(2S) \rightarrow \gamma\eta_b(2S)$, $\eta_b(2S) \rightarrow$ hadrons, and Confirmation of $\eta_b(1S)$ ”, Phys. Rev. Lett. **109**, 082001 (2012).
 - [69] S. Sandilya *et al.* (Belle Collaboration), “Search for Bottomonium States in Exclusive Radiative $\Upsilon(2S)$ Decays”, Phys. Rev. Lett. **111**, 112001 (2013).
 - [70] W.-k. Kwong and J. L. Rosner, “Masses of new particles containing b quarks”, Phys. Rev. D **44**, 212 (1991).
 - [71] E. J. Eichten and C. Quigg, “Mesons with beauty and charm: Spectroscopy”, Phys. Rev. D **49**, 5845 (1994).
 - [72] F. Abe *et al.* (CDF Collaboration), “Observation of the B_c meson in $p\bar{p}$ collisions at $\sqrt{s} = 1.8$ TeV”, Phys. Rev. Lett. **81**, 2432 (1998).
 - [73] V. M. Abazov *et al.* (D0 Collaboration), “Observation of the B_c Meson in the Exclusive Decay $B_c \rightarrow J/\psi\pi$ ”, Phys. Rev. Lett. **101**, 012001 (2008).
 - [74] R. Aaij *et al.* (LHCb Collaboration), “Measurements of B_c^+ production and mass with the $B_c^+ \rightarrow J/\psi\pi^+$ decay”, Phys. Rev. Lett. **109**, 232001 (2012).
 - [75] R. Aaij *et al.* (LHCb Collaboration), “Measurement of the B_c^+ meson lifetime using $B_c^+ \rightarrow J/\psi\mu^+\nu_\mu X$ decays”, Eur. Phys. J. C **74**, 2839 (2014).
-

-
- [76] G. Aad *et al.* (ATLAS Collaboration), “Observation of an Excited B_c^\pm Meson State with the ATLAS Detector”, Phys. Rev. Lett. **113**, 212004 (2014).
 - [77] E. Eichten, S. Godfrey, H. Mahlke and J. L. Rosner, “Quarkonia and their transitions”, Rev. Mod. Phys. **80**, 1161 (2008).
 - [78] S. Godfrey and S. L. Olsen, “The Exotic XYZ Charmonium-like Mesons”, Ann. Rev. Nucl. Part. Sci. **58**, 51 (2008).
 - [79] T. Barnes and S. L. Olsen, “Charmonium spectroscopy”, Int. J. Mod. Phys. A **24S1**, 305 (2009).
 - [80] A. Andronic *et al.*, “Heavy-flavour and quarkonium production in the LHC era: from proton–proton to heavy-ion collisions”, Eur. Phys. J. C **76**, 107 (2016).
 - [81] S. Cho, K. Hattori, S. H. Lee, K. Morita and S. Ozaki, “Charmonium Spectroscopy in Strong Magnetic Fields by QCD Sum Rules: S-Wave Ground States”, Phys. Rev. D **91**, 045025 (2015).
 - [82] T. Hilger, C. Popovici, M. Gomez-Rocha and A. Krassnigg, “Spectra of heavy quarkonia in a Bethe-Salpeter-equation approach”, Phys. Rev. D **91**, 034013 (2015).
 - [83] M. B. Voloshin, “Charmonium”, Prog. Part. Nucl. Phys. **61**, 455 (2008).
 - [84] Y. Kiyo and Y. Sumino, “Perturbative heavy quarkonium spectrum at next-to-next-to-next-to-leading order”, Phys. Lett. **B730**, 76 (2014).
 - [85] T. Liu, A. A. Penin and A. Rayyan, “Coulomb Artifacts and Bottomonium Hyperfine Splitting in Lattice NRQCD”, JHEP **02**, 084 (2017).
 - [86] R. J. Dowdall, C. T. H. Davies, T. Hammant and R. R. Horgan (HPQCD Collaboration), “Bottomonium hyperfine splittings from lattice nonrelativistic QCD including radiative and relativistic corrections”, Phys. Rev. D **89**, 031502 (2014), [Erratum: Phys. Rev.D92,039904(2015)].
 - [87] M. Neubert, “Heavy quark symmetry”, Phys. Rept. **245**, 259 (1994).
 - [88] D. Ebert, R. N. Faustov and V. O. Galkin, “Spectroscopy and Regge trajectories of heavy quarkonia and B_c mesons”, Eur. Phys. J. C **71**, 1825 (2011).
 - [89] D. Ebert, R. N. Faustov and V. O. Galkin, “Mass spectra and Regge trajectories of light mesons in the relativistic quark model”, Phys. Rev. D **79**, 114029 (2009).
 - [90] D. Ebert, R. N. Faustov and V. O. Galkin, “Masses and electroweak properties of light mesons in the relativistic quark model”, Eur. Phys. J. C **47**, 745 (2006).
 - [91] D. Ebert, R. N. Faustov and V. O. Galkin, “Properties of heavy quarkonia and B_c mesons in the relativistic quark model”, Phys. Rev. D **67**, 014027 (2003).
-

-
- [92] D. Ebert, R. N. Faustov and V. O. Galkin, “Hyperfine splitting and leptonic decay rates in heavy quarkonia”, *Mod. Phys. Lett. A* **18**, 1597 (2003).
 - [93] D. Ebert, R. N. Faustov and V. O. Galkin, “Two photon decay rates of heavy quarkonia in the relativistic quark model”, *Mod. Phys. Lett. A* **18**, 601 (2003).
 - [94] D. Ebert, R. N. Faustov and V. O. Galkin, “Quark - anti-quark potential with retardation and radiative contributions and the heavy quarkonium mass spectra”, *Phys. Rev. D* **62**, 034014 (2000).
 - [95] S. N. Gupta and S. F. Radford, “Quark – quark and quark – antiquark Potentials”, *Phys. Rev. D* **24**, 2309 (1981).
 - [96] S. N. Gupta, S. F. Radford and W. W. Repko, “Quarkonium Spectra and Quantum Chromodynamics”, *Phys. Rev. D* **26**, 3305 (1982).
 - [97] S. N. Gupta and S. F. Radford, “Remarks on quark-quarks and quark-antiquark potentials”, *Phys. Rev. D* **25**, 3430 (1982).
 - [98] J. T. Pantaleone, S. H. H. Tye and Y. J. Ng, “Spin Splittings in Heavy Quarkonia”, *Phys. Rev. D* **33**, 777 (1986).
 - [99] K. M. Maung, D. E. Kahana and J. W. Norbury, “Solution of two-body relativistic bound state equations with confining plus Coulomb interactions”, *Phys. Rev. D* **47**, 1182 (1993).
 - [100] S. F. Radford and W. W. Repko, “Potential model calculations and predictions for heavy quarkonium”, *Phys. Rev. D* **75**, 074031 (2007).
 - [101] S. F. Radford and W. W. Repko, “Hyperfine splittings in the $b\bar{b}$ system”, *Nucl. Phys. A* **865**, 69 (2011).
 - [102] S. N. Gupta, S. F. Radford and W. W. Repko, “Semirelativistic Potential Model for Heavy Quarkonia”, *Phys. Rev. D* **34**, 201 (1986).
 - [103] N. Devlani, V. Kher and A. K. Rai, “Masses and electromagnetic transitions of the B_c mesons”, *Eur. Phys. J. A* **50**, 154 (2014).
 - [104] B. Patel and P. C. Vinodkumar, “Properties of $Q\bar{Q}$ ($Q \in b, c$) mesons in Coulomb plus Power potential (CPP $_\nu$)”, *J. Phys. G* **36**, 035003 (2009).
 - [105] M. Fabre De La Ripelle, “A Confining Potential for Quarks”, *Phys. Lett.* **B205**, 97 (1988).
 - [106] E. Eichten, K. Gottfried, T. Kinoshita, J. B. Kogut, K. D. Lane and T.-M. Yan, “The Spectrum of Charmonium”, *Phys. Rev. Lett.* **34**, 369 (1975), [Erratum: *Phys. Rev. Lett.* 36, 1276(1976)].
 - [107] E. Eichten, K. Gottfried, T. Kinoshita, K. D. Lane and T.-M. Yan, “Charmonium: Comparison with Experiment”, *Phys. Rev. D* **21**, 203 (1980).
 - [108] E. Eichten and F. Feinberg, “Spin Dependent Forces in QCD”, *Phys. Rev. D* **23**, 2724 (1981).
-

-
- [109] T. Barnes, S. Godfrey and E. S. Swanson, “Higher charmonia”, Phys. Rev. D **72**, 054026 (2005).
 - [110] V. Sauli, “Bethe-Salpeter Study of Radially Excited Vector Quarkonia”, Phys. Rev. D **86**, 096004 (2012).
 - [111] S. Leitão, A. Stadler, M. T. Peña and E. P. Biernat, “Linear confinement in momentum space: singularity-free bound-state equations”, Phys. Rev. D **90**, 096003 (2014).
 - [112] S. Godfrey and N. Isgur, “Mesons in a Relativized Quark Model with Chromodynamics”, Phys. Rev. D **32**, 189 (1985).
 - [113] S. Godfrey, “Spectroscopy of B_c mesons in the relativized quark model”, Phys. Rev. D **70**, 054017 (2004).
 - [114] S. Godfrey and K. Moats, “Bottomonium Mesons and Strategies for their Observation”, Phys. Rev. D **92**, 054034 (2015).
 - [115] W.-J. Deng, H. Liu, L.-C. Gui and X.-H. Zhong, “Charmonium spectrum and their electromagnetic transitions with higher multipole contributions”, Phys. Rev. D **95**, 034026 (2017).
 - [116] W.-J. Deng, H. Liu, L.-C. Gui and X.-H. Zhong, “Spectrum and electromagnetic transitions of bottomonium”, Phys. Rev. D **95**, 074002 (2017).
 - [117] C. S. Fischer, S. Kubrak and R. Williams, “Spectra of heavy mesons in the Bethe-Salpeter approach”, Eur. Phys. J. A **51**, 10 (2015).
 - [118] O. Lakhina and E. S. Swanson, “Dynamic properties of charmonium”, Phys. Rev. D **74**, 014012 (2006).
 - [119] J. Segovia, P. G. Ortega, D. R. Entem and F. Fernández, “Bottomonium spectrum revisited”, Phys. Rev. D **93**, 074027 (2016).
 - [120] S. Patel, P. C. Vinodkumar and S. Bhatnagar, “Decay rates of charmonia within a quark-antiquark confining potential”, Chin. Phys. C **40**, 053102 (2016).
 - [121] C. Bonati, M. D’Elia and A. Rucci, “Heavy quarkonia in strong magnetic fields”, Phys. Rev. D **92**, 054014 (2015).
 - [122] T. Gutsche, V. E. Lyubovitskij, I. Schmidt and A. Vega, “Light-front potential for heavy quarkonia constrained by the holographic soft-wall model”, Phys. Rev. D **90**, 096007 (2014).
 - [123] M. Shah, A. Parmar and P. C. Vinodkumar, “Leptonic and Digamma decay Properties of S-wave quarkonia states”, Phys. Rev. D **86**, 034015 (2012).
 - [124] H. Negash and S. Bhatnagar, “Spectroscopy of ground and excited states of pseudoscalar and vector charmonium and bottomonium”, Int. J. Mod. Phys. E **25**, 1650059 (2016).
-

-
- [125] Bhaghyesh, K. B. Vijaya Kumar and A. P. Monteiro, “Heavy quarkonium spectra and its decays in a nonrelativistic model with Hulthen potential”, *J. Phys. G* **38**, 085001 (2011).
 - [126] B.-Q. Li and K.-T. Chao, “Higher Charmonia and X,Y,Z states with Screened Potential”, *Phys. Rev. D* **79**, 094004 (2009).
 - [127] B.-Q. Li and K.-T. Chao, “Bottomonium Spectrum with Screened Potential”, *Commun. Theor. Phys.* **52**, 653 (2009).
 - [128] G. S. Bali, B. Bolder, N. Eicker, T. Lippert, B. Orth, P. Ueberholz, K. Schilling and T. Struckmann (TXL, T(X)L Collaboration), “Static potentials and glueball masses from QCD simulations with Wilson sea quarks”, *Phys. Rev. D* **62**, 054503 (2000).
 - [129] G. S. Bali, “QCD forces and heavy quark bound states”, *Phys. Rept.* **343**, 1 (2001).
 - [130] C. Alexandrou, P. de Forcrand and O. Jahn, “The Ground state of three quarks”, *Nucl. Phys. Proc. Suppl.* **119**, 667 (2003).
 - [131] N. R. Soni, B. R. Joshi, R. P. Shah, H. R. Chauhan and J. N. Pandya, “ $Q\bar{Q}$ ($Q \in \{b, c\}$) spectroscopy using the Cornell potential”, *Eur. Phys. J. C* **78**, 592 (2018).
 - [132] A. K. Rai, J. N. Pandya and P. C. Vinodkumar, “Multiquark states as di-hadronic molecules”, *Nucl. Phys. A* **782**, 406 (2007).
 - [133] A. K. Rai, J. N. Pandya and P. C. Vinodkumar, “Low-lying di-hadronic states in relativistic harmonic model”, *Indian J. Phys. A* **80**, 387 (2006).
 - [134] J. N. Pandya, N. R. Soni, N. Devlani and A. K. Rai, “Decay rates and electromagnetic transitions of heavy quarkonia”, *Chin. Phys. C* **39**, 123101 (2015).
 - [135] N. Isgur and G. Karl, “P Wave Baryons in the Quark Model”, *Phys. Rev. D* **18**, 4187 (1978).
 - [136] K. B. Vijaya Kumar, A. K. Rath and S. B. Khadkikar, “Meson spectroscopy with confined one gluon exchange potential”, *Pramana* **48**, 997 (1997).
 - [137] W. Lucha and F. F. Schoberl, “Solving the Schrodinger equation for bound states with Mathematica 3.0”, *Int. J. Mod. Phys. C* **10**, 607 (1999).
 - [138] A. P. Monteiro, M. Bhat and K. B. Vijaya Kumar, “ $c\bar{b}$ spectrum and decay properties with coupled channel effects”, *Phys. Rev. D* **95**, 054016 (2017).
 - [139] S. B. Khadkikar and S. K. Gupta, “Magnetic Moments of Light Baryons in the Harmonic Model”, *Phys. Lett.* **B124**, 523 (1983).
 - [140] S. K. Gupta and S. B. Khadkikar, “Precision Description of the Octet Baryon Magnetic Moments”, *Phys. Rev. D* **36**, 307 (1987).
-

-
- [141] R. Van Royen and V. F. Weisskopf, “Hadron Decay Processes and the Quark Model”, *Nuovo Cim. A* **50**, 617 (1967), [Erratum: *Nuovo Cim.*A51,583(1967)].
 - [142] E. Braaten and S. Fleming, “QCD radiative corrections to the leptonic decay rate of the $B(c)$ meson”, *Phys. Rev. D* **52**, 181 (1995).
 - [143] A. V. Berezhnoy, V. V. Kiselev and A. K. Likhoded, “Photonic production of S- and P wave B_c states and doubly heavy baryons”, *Z. Phys. A* **356**, 89 (1996).
 - [144] A. Krassnigg, M. Gomez-Rocha and T. Hilger, “Leptonic decays of D -wave vector quarkonia”, *J. Phys. Conf. Ser.* **742**, 012032 (2016).
 - [145] G.-L. Wang, “Decay constants of heavy vector mesons in relativistic Bethe-Salpeter method”, *Phys. Lett. B* **633**, 492 (2006).
 - [146] K. M. Ecklund *et al.* (CLEO Collaboration), “Two-Photon Widths of the χ_{cJ} States of Charmonium”, *Phys. Rev. D* **78**, 091501 (2008).
 - [147] J. P. Lees *et al.* (BABAR Collaboration), “Measurement of the $\gamma\gamma^* \rightarrow \eta_c$ transition form factor”, *Phys. Rev. D* **81**, 052010 (2010).
 - [148] M. Ablikim *et al.* (BESIII Collaboration), “Two-photon widths of the χ_{cJ} states of charmonium”, *Phys. Rev. D* **85**, 112008 (2012).
 - [149] J. J. Dudek and R. G. Edwards, “Two Photon Decays of Charmonia from Lattice QCD”, *Phys. Rev. Lett.* **97**, 172001 (2006).
 - [150] T. Chen *et al.* (CLQCD Collaboration), “Two-photon decays of η_c from lattice QCD”, *Eur. Phys. J. C* **76**, 358 (2016).
 - [151] H. Khan and P. Hoodbhoy, “A Systematic gauge invariant approach to heavy quarkonium decays”, *Phys. Rev. D* **53**, 2534 (1996).
 - [152] G. A. Schuler, F. A. Berends and R. van Gulik, “Meson photon transition form-factors and resonance cross-sections in e^+e^- collisions”, *Nucl. Phys. B* **523**, 423 (1998).
 - [153] G. T. Bodwin, D. Kang and J. Lee, “Potential-model calculation of an order- v^2 nonrelativistic QCD matrix element”, *Phys. Rev. D* **74**, 014014 (2006).
 - [154] G. T. Bodwin, H. S. Chung, D. Kang, J. Lee and C. Yu, “Improved determination of color-singlet nonrelativistic QCD matrix elements for S-wave charmonium”, *Phys. Rev. D* **77**, 094017 (2008).
 - [155] J. P. Lansberg and T. N. Pham, “Effective Lagrangian for Two-photon and Two-gluon Decays of P-wave Heavy Quarkonium $\chi_{c0,2}$ and $\chi_{b0,2}$ states”, *Phys. Rev. D* **79**, 094016 (2009).
 - [156] J. P. Lansberg and T. N. Pham, “Two-photon width of η_c and η'_c from heavy-quark spin symmetry”, *Phys. Rev. D* **74**, 034001 (2006).
-

-
- [157] W.-L. Sang, F. Feng, Y. Jia and S.-R. Liang, “Next-to-next-to-leading-order QCD corrections to $\chi_{c0,2} \rightarrow \gamma\gamma$ ”, Phys. Rev. D **94**, 111501 (2016).
 - [158] C. S. Kim, T. Lee and G.-L. Wang, “Annihilation rate of heavy 0^{-+} quarkonium in relativistic Salpeter method”, Phys. Lett. B **606**, 323 (2005).
 - [159] V. Kher and A. K. Rai, “Spectroscopy and decay properties of charmonium”, Chin. Phys. C **42**, 083101 (2018).
 - [160] L. D. Landau, “On the angular momentum of a system of two photons”, Dokl. Akad. Nauk Ser. Fiz. **60**, 207 (1948).
 - [161] C.-N. Yang, “Selection Rules for the Dematerialization of a Particle Into Two Photons”, Phys. Rev. **77**, 242 (1950).
 - [162] W. Kwong, P. B. Mackenzie, R. Rosenfeld and J. L. Rosner, “Quarkonium Annihilation Rates”, Phys. Rev. D **37**, 3210 (1988).
 - [163] E. J. Eichten, K. Lane and C. Quigg, “B Meson Gateways to Missing Charmonium Levels”, Phys. Rev. Lett. **89**, 162002 (2002).
 - [164] R. Barbieri, M. Caffo, R. Gatto and E. Remiddi, “QCD Corrections to P wave quarkonium decays”, Nucl. Phys. B **192**, 61 (1981).
 - [165] M. L. Mangano and A. Petrelli, “An update on χ_c decays: Perturbative QCD versus data”, Phys. Lett. B **352**, 445 (1995).
 - [166] S. N. Gupta, J. M. Johnson and W. W. Repko, “Relativistic two photon and two gluon decay rates of heavy quarkonia”, Phys. Rev. D **54**, 2075 (1996).
 - [167] P. Gonzalez, A. Valcarce, H. Garcilazo and J. Vijande, “Heavy meson description with a screened potential”, Phys. Rev. D **68**, 034007 (2003).
 - [168] N. Brambilla, Y. Jia and A. Vairo, “Model-independent study of magnetic dipole transitions in quarkonium”, Phys. Rev. D **73**, 054005 (2006).
 - [169] D.-M. Li, P.-F. Ji and B. Ma, “The newly observed open-charm states in quark model”, Eur. Phys. J. C **71**, 1582 (2011).
 - [170] A. Abd El-Hady, M. A. K. Lodhi and J. P. Vary, “ B_c mesons in a Bethe-Salpeter model”, Phys. Rev. D **59**, 094001 (1999).
 - [171] S. N. Gupta and J. M. Johnson, “ B_c spectroscopy in a quantum chromodynamic potential model”, Phys. Rev. D **53**, 312 (1996).
 - [172] H.-X. Chen, W. Chen, X. Liu, Y.-R. Liu and S.-L. Zhu, “A review of the open charm and open bottom systems”, Rept. Prog. Phys. **80**, 076201 (2017).
 - [173] E. Klempt and J.-M. Richard, “Baryon spectroscopy”, Rev. Mod. Phys. **82**, 1095 (2010).
 - [174] M. Gell-Mann, “A Schematic Model of Baryons and Mesons”, Phys. Lett. **8**, 214 (1964).
-

-
- [175] M. Mattson *et al.* (SELEX Collaboration), “First Observation of the Doubly Charmed Baryon Ξ_{cc}^+ ”, Phys. Rev. Lett. **89**, 112001 (2002).
 - [176] A. Ocherashvili *et al.* (SELEX Collaboration), “Confirmation of the double charm baryon $\Xi_{cc}^+(3520)$ via its decay to pD^+K^- ”, Phys. Lett. **B628**, 18 (2005).
 - [177] R. Aaij *et al.* (LHCb Collaboration), “Observation of the doubly charmed baryon Ξ_{cc}^{++} ”, Phys. Rev. Lett. **119**, 112001 (2017).
 - [178] R. Aaij *et al.* (LHCb Collaboration), “Measurement of the Lifetime of the Doubly Charmed Baryon Ξ_{cc}^{++} ”, Phys. Rev. Lett. **121**, 052002 (2018).
 - [179] R. Aaij *et al.* (LHCb Collaboration), “Search for the doubly charmed baryon Ξ_{cc}^+ ”, JHEP **12**, 090 (2013).
 - [180] Q.-X. Yu and X.-H. Guo, “Masses of doubly heavy baryons in the Bethe-Salpeter equation approach”, [arXiv:1810.00437](https://arxiv.org/abs/1810.00437).
 - [181] Q.-F. Lü, K.-L. Wang, L.-Y. Xiao and X.-H. Zhong, “Mass spectra and radiative transitions of doubly heavy baryons in a relativized quark model”, Phys. Rev. D **96**, 114006 (2017).
 - [182] D. Ebert, R. N. Faustov, V. O. Galkin and A. P. Martynenko, “Mass spectra of doubly heavy baryons in the relativistic quark model”, Phys. Rev. D **66**, 014008 (2002).
 - [183] S. S. Gershtein, V. V. Kiselev, A. K. Likhoded and A. I. Onishchenko, “Spectroscopy of doubly heavy baryons”, Phys. Rev. D **62**, 054021 (2000).
 - [184] H.-S. Li, L. Meng, Z.-W. Liu and S.-L. Zhu, “Radiative decays of the doubly charmed baryons in chiral perturbation theory”, Phys. Lett. **B777**, 169 (2018).
 - [185] H.-S. Li, L. Meng, Z.-W. Liu and S.-L. Zhu, “Magnetic moments of the doubly charmed and bottom baryons”, Phys. Rev. D **96**, 076011 (2017).
 - [186] L. Meng, H.-S. Li, Z.-W. Liu and S.-L. Zhu, “Magnetic moments of the spin- $\frac{3}{2}$ doubly heavy baryons”, Eur. Phys. J. C **77**, 869 (2017).
 - [187] D.-L. Yao, “Masses and sigma terms of doubly charmed baryons up to $\mathcal{O}(p^4)$ in manifestly Lorentz-invariant baryon chiral perturbation theory”, Phys. Rev. D **97**, 034012 (2018).
 - [188] M.-Z. Liu, Y. Xiao and L.-S. Geng, “Magnetic moments of the spin-1/2 doubly charmed baryons in covariant baryon chiral perturbation theory”, Phys. Rev. D **98**, 014040 (2018).
 - [189] V. V. Kiselev, A. V. Berezhnoy and A. K. Likhoded, “Quark–Diquark Structure and Masses of Doubly Charmed Baryons”, Phys. Atom. Nucl. **81**, 369 (2018), [Yad. Fiz.81,no.3,356(2018)].
 - [190] A. Bernotas and V. Šimonis, “Radiative M1 transitions of heavy baryons in the bag model”, Phys. Rev. D **87**, 074016 (2013).
-

-
- [191] V. Simonis, “Improved predictions for magnetic moments and M1 decay widths of heavy hadrons”, (2018), [arXiv:1803.01809](https://arxiv.org/abs/1803.01809).
 - [192] Yu. A. Simonov, J. A. Tjon and J. Weda, “Baryon magnetic moments in the effective quark Lagrangian approach”, Phys. Rev. D **65**, 094013 (2002).
 - [193] N. Sharma, H. Dahiya, P. K. Chatley and M. Gupta, “Spin $1/2^+$, spin $3/2^+$ and transition magnetic moments of low lying and charmed baryons”, Phys. Rev. D **81**, 073001 (2010).
 - [194] A. Faessler, T. Gutsche, M. A. Ivanov, J. G. Korner, V. E. Lyubovitskij, D. Nicmorus and K. Pumsa-ard, “Magnetic moments of heavy baryons in the relativistic three-quark model”, Phys. Rev. D **73**, 094013 (2006).
 - [195] T. Branz, A. Faessler, T. Gutsche, M. A. Ivanov, J. G. Korner, V. E. Lyubovitskij and B. Oexl, “Radiative decays of double heavy baryons in a relativistic constituent three-quark model including hyperfine mixing”, Phys. Rev. D **81**, 114036 (2010).
 - [196] X.-Z. Weng, X.-L. Chen and W.-Z. Deng, “Masses of doubly heavy-quark baryons in an extended chromomagnetic model”, Phys. Rev. D **97**, 054008 (2018).
 - [197] W. Roberts and M. Pervin, “Heavy baryons in a quark model”, Int. J. Mod. Phys. A **23**, 2817 (2008).
 - [198] C. Albertus, E. Hernandez, J. Nieves and J. M. Verde-Velasco, “Static properties and semileptonic decays of doubly heavy baryons in a nonrelativistic quark model”, Eur. Phys. J. A **32**, 183 (2007), [Erratum: Eur. Phys. J.A36,119(2008)].
 - [199] R. Dhir and R. C. Verma, “Magnetic Moments of ($J^P = 3/2^+$) Heavy Baryons Using Effective Mass Scheme”, Eur. Phys. J. A **42**, 243 (2009).
 - [200] R. Dhir, C. S. Kim and R. C. Verma, “Magnetic Moments of Bottom Baryons: Effective mass and Screened Charge”, Phys. Rev. D **88**, 094002 (2013).
 - [201] B. Patel, A. K. Rai and P. C. Vinodkumar, “Masses and magnetic moments of heavy flavour baryons in hyper central model”, J. Phys. G **35**, 065001 (2008), [J. Phys. Conf. Ser.110,122010(2008)].
 - [202] Z. Shah, K. Thakkar and A. K. Rai, “Excited State Mass spectra of doubly heavy baryons Ω_{cc} , Ω_{bb} and Ω_{bc} ”, Eur. Phys. J. C **76**, 530 (2016).
 - [203] Z. Shah and A. K. Rai, “Excited state mass spectra of doubly heavy Ξ baryons”, Eur. Phys. J. C **77**, 129 (2017).
 - [204] Z. Shah and A. K. Rai, “Masses and Regge trajectories of triply heavy Ω_{ccc} and Ω_{bbb} baryons”, Eur. Phys. J. A **53**, 195 (2017).
 - [205] T. M. Aliev, K. Azizi and M. Savci, “The masses and residues of doubly heavy spin- $3/2$ baryons”, J. Phys. G **40**, 065003 (2013).
-

-
- [206] T. M. Aliev, K. Azizi and M. Savci, “Doubly Heavy Spin-1/2 Baryon Spectrum in QCD”, Nucl. Phys. A **895**, 59 (2012).
 - [207] J.-R. Zhang and M.-Q. Huang, “Doubly heavy baryons in QCD sum rules”, Phys. Rev. D **78**, 094007 (2008).
 - [208] Z.-G. Wang, “Analysis of the $\frac{1}{2}^+$ doubly heavy baryon states with QCD sum rules”, Eur. Phys. J. A **45**, 267 (2010).
 - [209] V. V. Kiselev and A. I. Onishchenko, “Doubly heavy baryons in sum rules of NRQCD”, Nucl. Phys. **B581**, 432 (2000).
 - [210] U. Özdem, “Magnetic moments of doubly heavy baryons in light-cone QCD”, J. Phys. G **46**, 035003 (2019).
 - [211] K.-W. Wei, B. Chen and X.-H. Guo, “Masses of doubly and triply charmed baryons”, Phys. Rev. D **92**, 076008 (2015).
 - [212] K.-W. Wei, B. Chen, N. Liu, Q.-Q. Wang and X.-H. Guo, “Spectroscopy of singly, doubly, and triply bottom baryons”, Phys. Rev. D **95**, 116005 (2017).
 - [213] P. C. Vinodkumar, K. B. Vijayakumar and S. B. Khadkikar, “Effect of the confined gluons in quark quark interaction”, Pramana **39**, 47 (1992).
 - [214] A. Majethiya, B. Patel and P. C. Vinodkumar, “Radiative decays of single heavy flavour baryons”, Eur. Phys. J. A **42**, 213 (2009).
 - [215] L.-Y. Xiao, K.-L. Wang, Q.-f. Lu, X.-H. Zhong and S.-L. Zhu, “Strong and radiative decays of the doubly charmed baryons”, Phys. Rev. D **96**, 094005 (2017).
 - [216] M. Ablikim *et al.* (BESIII Collaboration), “Observation of a Charged Charmoniumlike Structure in $e^+e^- \rightarrow \pi^+\pi^-J/\psi$ at $\sqrt{s}=4.26$ GeV”, Phys. Rev. Lett. **110**, 252001 (2013).
 - [217] Z. Q. Liu *et al.* (Belle Collaboration), “Study of $e^+e^- \rightarrow \pi^+\pi^-J/\psi$ and Observation of a Charged Charmoniumlike State at Belle”, Phys. Rev. Lett. **110**, 252002 (2013).
 - [218] T. Xiao, S. Dobbs, A. Tomaradze and K. K. Seth, “Observation of the Charged Hadron $Z_c^\pm(3900)$ and Evidence for the Neutral $Z_c^0(3900)$ in $e^+e^- \rightarrow \pi\pi J/\psi$ at $\sqrt{s} = 4170$ MeV”, Phys. Lett. **B727**, 366 (2013).
 - [219] M. Ablikim *et al.* (BESIII Collaboration), “Determination of the Spin and Parity of the $Z_c(3900)$ ”, Phys. Rev. Lett. **119**, 072001 (2017).
 - [220] A. Bondar *et al.* (Belle Collaboration), “Observation of two charged bottomonium-like resonances in $\Upsilon(5S)$ decays”, Phys. Rev. Lett. **108**, 122001 (2012).
 - [221] A. Garmash *et al.* (Belle Collaboration), “Amplitude analysis of $e^+e^- \rightarrow \Upsilon(nS)\pi^+\pi^-$ at $\sqrt{s} = 10.865$ GeV”, Phys. Rev. D **91**, 072003 (2015).
-

-
- [222] A. Garmash *et al.* (Belle Collaboration), “Observation of $Z_b(10610)$ and $Z_b(10650)$ Decaying to B Mesons”, Phys. Rev. Lett. **116**, 212001 (2016).
 - [223] R. L. Jaffe, “Multi-Quark Hadrons. 1. The Phenomenology of $Q^2\bar{Q}^2$ Mesons”, Phys. Rev. D **15**, 267 (1977).
 - [224] R. L. Jaffe, “ $Q^2\bar{Q}^2$ Resonances in the Baryon - antiBaryon System”, Phys. Rev. D **17**, 1444 (1978).
 - [225] L. Maiani, F. Piccinini, A. D. Polosa and V. Riquer, “Diquark-antidiquarks with hidden or open charm and the nature of $X(3872)$ ”, Phys. Rev. D **71**, 014028 (2005).
 - [226] A. V. Manohar and M. B. Wise, “Exotic $QQ\bar{q}\bar{q}$ states in QCD”, Nucl. Phys. B **399**, 17 (1993).
 - [227] F. S. Navarra, M. Nielsen and J.-M. Richard, “Exotic Charmonium and Bottomonium-like Resonances”, J. Phys. Conf. Ser. **348**, 012007 (2012).
 - [228] T. Guo, L. Cao, M.-Z. Zhou and H. Chen, “The Possible candidates of tetraquark: $Z_b(10610)$ and $Z_b(10650)$ ”, (2011), [arXiv:1106.2284](https://arxiv.org/abs/1106.2284).
 - [229] L. Zhao, W.-Z. Deng and S.-L. Zhu, “Hidden-Charm Tetraquarks and Charged Z_c States”, Phys. Rev. D **90**, 094031 (2014).
 - [230] S. Patel, M. Shah and P. C. Vinodkumar, “Mass spectra of four-quark states in the hidden charm sector”, Eur. Phys. J. A **50**, 131 (2014).
 - [231] S. Patel and P. C. Vinodkumar, “Tetraquark states in the bottom sector and the status of the Y_b (10890) state”, Eur. Phys. J. C **76**, 356 (2016).
 - [232] I. V. Danilkin, V. D. Orlovsky and Yu. A. Simonov, “Hadron interaction with heavy quarkonia”, Phys. Rev. D **85**, 034012 (2012).
 - [233] S. Dubynskiy and M. B. Voloshin, “Hadro-Charmonium”, Phys. Lett. **B666**, 344 (2008).
 - [234] M. Alberti, G. S. Bali, S. Collins, F. Knechtli, G. Moir and W. Söldner, “Hadroquarkonium from lattice QCD”, Phys. Rev. D **95**, 074501 (2017).
 - [235] Y. Dong, A. Faessler, T. Gutsche and V. E. Lyubovitskij, “Decays of Z_b^+ and $Z_b'^+$ as Hadronic Molecules”, J. Phys. G **40**, 015002 (2013).
 - [236] Y. Dong, A. Faessler, T. Gutsche and V. E. Lyubovitskij, “Strong decays of molecular states Z_c^+ and $Z_c'^+$ ”, Phys. Rev. D **88**, 014030 (2013).
 - [237] A. E. Bondar, A. Garmash, A. I. Milstein, R. Mizuk and M. B. Voloshin, “Heavy quark spin structure in Z_b resonances”, Phys. Rev. D **84**, 054010 (2011).
 - [238] M. B. Voloshin, “Radiative transitions from $\Upsilon(5S)$ to molecular bottomonium”, Phys. Rev. D **84**, 031502 (2011).
-

-
- [239] J.-R. Zhang, M. Zhong and M.-Q. Huang, “Could $Z_b(10610)$ be a $B^*\bar{B}$ molecular state?”, Phys. Lett. **B704**, 312 (2011).
 - [240] C.-Y. Cui, Y.-L. Liu and M.-Q. Huang, “Investigating different structures of the $Z_b(10610)$ and $Z_b(10650)$ ”, Phys. Rev. D **85**, 074014 (2012).
 - [241] Y. Yang, J. Ping, C. Deng and H.-S. Zong, “Possible interpretation of the $Z_b(10610)$ and $Z_b(10650)$ in a chiral quark model”, J. Phys. G **39**, 105001 (2012).
 - [242] Z.-F. Sun, J. He, X. Liu, Z.-G. Luo and S.-L. Zhu, “ $Z_b(10610)^\pm$ and $Z_b(10650)^\pm$ as the $B^*\bar{B}$ and $B^*\bar{B}^*$ molecular states”, Phys. Rev. D **84**, 054002 (2011).
 - [243] M. Cleven, F.-K. Guo, C. Hanhart and U.-G. Meissner, “Bound state nature of the exotic Z_b states”, Eur. Phys. J. A **47**, 120 (2011).
 - [244] X.-H. Liu, L. Ma, L.-P. Sun, X. Liu and S.-L. Zhu, “Resolving the puzzling decay patterns of charged Z_c and Z_b states”, Phys. Rev. D **90**, 074020 (2014).
 - [245] L. Ma, X.-H. Liu, X. Liu and S.-L. Zhu, “Strong decays of the XYZ states”, Phys. Rev. D **91**, 034032 (2015).
 - [246] H.-X. Chen, W. Chen, X. Liu and S.-L. Zhu, “The hidden-charm pentaquark and tetraquark states”, Phys. Rept. **639**, 1 (2016).
 - [247] F. E. Close and P. R. Page, “The $D^{*0}\bar{D}^0$ threshold resonance”, Phys. Lett. **B578**, 119 (2004).
 - [248] M. T. Li, W. L. Wang, Y. B. Dong and Z. Y. Zhang, “ $Z_b(10650)$ and $Z_b(10610)$ States in A Chiral Quark Model”, J. Phys. G **40**, 015003 (2013).
 - [249] G.-J. Wang, X.-H. Liu, L. Ma, X. Liu, X.-L. Chen, W.-Z. Deng and S.-L. Zhu, “The strong decay patterns of Z_c and Z_b states in the relativized quark model”, [arXiv:1811.10339](https://arxiv.org/abs/1811.10339).
 - [250] W.-S. Huo and G.-Y. Chen, “The nature of Z_b states from a combined analysis of $\Upsilon(5S) \rightarrow h_b(mP)\pi^+\pi^-$ and $\Upsilon(5S) \rightarrow B^{(*)}\bar{B}^{(*)}\pi$ ”, Eur. Phys. J. C **76**, 172 (2016).
 - [251] M. Cleven, Q. Wang, F.-K. Guo, C. Hanhart, U.-G. Meissner and Q. Zhao, “Confirming the molecular nature of the $Z_b(10610)$ and the $Z_b(10650)$ ”, Phys. Rev. D **87**, 074006 (2013).
 - [252] T. Gutsche, V. E. Lyubovitskij and I. Schmidt, “Tetraquarks in holographic QCD”, Phys. Rev. D **96**, 034030 (2017).
 - [253] Z.-G. Wang and T. Huang, “The $Z_b(10610)$ and $Z_b(10650)$ as axial-vector tetraquark states in the QCD sum rules”, Nucl. Phys. A **930**, 63 (2014).
 - [254] F.-K. Guo, C. Hanhart, U.-G. Meißner, Q. Wang, Q. Zhao and B.-S. Zou, “Hadronic molecules”, Rev. Mod. Phys. **90**, 015004 (2018).

-
- [255] A. Ali, J. S. Lange and S. Stone, “Exotics: Heavy Pentaquarks and Tetraquarks”, *Prog. Part. Nucl. Phys.* **97**, 123 (2017).
 - [256] N. R. Soni, R. R. Chaturvedi, A. K. Rai and J. N. Pandya, “Mass and Hadronic Decay Widths of Z States as Di-meson Molecule”, *Springer Proc. Phys.* **203**, 729 (2018).
 - [257] R. D. Woods and D. S. Saxon, “Diffuse Surface Optical Model for Nucleon-Nuclei Scattering”, *Phys. Rev.* **95**, 577 (1954).
 - [258] C. Berkdemir, A. Berkdemir and R. Sever, “Polynomial solutions of the Schrodinger equation for the generalized Woods-Saxon potential”, *Phys. Rev. C* **72**, 027001 (2005).
 - [259] I. Adachi (Belle Collaboration), “Observation of two charged bottomonium-like resonances”, [arXiv:1105.4583](https://arxiv.org/abs/1105.4583).
 - [260] S. Patel, M. Shah, K. Thakkar and P. C. Vinodkumar, “Decay widths of Di-mesonic molecular states as candidates for Z_c and Z_b ”, *PoS Hadron2013*, 189 (2013).
 - [261] H.-W. Ke, Z.-T. Wei and X.-Q. Li, “Is $Z_c(3900)$ a molecular state”, *Eur. Phys. J. C* **73**, 2561 (2013).
 - [262] F. Goerke, T. Gutsche, M. A. Ivanov, J. G. Körner and V. E. Lyubovitskij, “ $Z_b(10610)$ and $Z'_b(10650)$ decays in a covariant quark model”, *Phys. Rev. D* **96**, 054028 (2017).
 - [263] J. D. Richman and P. R. Burchat, “Leptonic and semileptonic decays of charm and bottom hadrons”, *Rev. Mod. Phys.* **67**, 893 (1995).
 - [264] A. Ryd and A. A. Petrov, “Hadronic D and D_s Meson Decays”, *Rev. Mod. Phys.* **84**, 65 (2012).
 - [265] M. K. Gaillard and B. W. Lee, “Rare Decay Modes of the K-Mesons in Gauge Theories”, *Phys. Rev. D* **10**, 897 (1974).
 - [266] J. P. Lees *et al.* (BABAR Collaboration), “Measurement of the $D^0 \rightarrow \pi^- e^+ \nu_e$ differential decay branching fraction as a function of q^2 and study of form factor parameterizations”, *Phys. Rev. D* **91**, 052022 (2015).
 - [267] B. Aubert *et al.* (BABAR Collaboration), “Study of the decay $D_s^+ \rightarrow K^+ K^- e^+ \nu_e$ ”, *Phys. Rev. D* **78**, 051101 (2008).
 - [268] L. Widhalm *et al.* (Belle Collaboration), “Measurement of $D^0 \rightarrow \pi \ell \nu (K \ell \nu)$ Form Factors and Absolute Branching Fractions”, *Phys. Rev. Lett.* **97**, 061804 (2006).
 - [269] M. Ablikim *et al.* (BESIII Collaboration), “Study of Dynamics of $D^0 \rightarrow K^- e^+ \nu_e$ and $D^0 \rightarrow \pi^- e^+ \nu_e$ Decays”, *Phys. Rev. D* **92**, 072012 (2015).

-
- [270] D. Besson *et al.* (CLEO Collaboration), “Improved measurements of D meson semileptonic decays to π and K mesons”, Phys. Rev. D **80**, 032005 (2009).
 - [271] P. Colangelo and F. De Fazio, “ D_s decays to eta and eta-prime final states: A Phenomenological analysis”, Phys. Lett. **B520**, 78 (2001).
 - [272] D.-S. Du, J.-W. Li and M.-Z. Yang, “Form-factors and semileptonic decay of $D_s^+ \rightarrow \phi \bar{l} \nu$ from QCD sum rule”, Eur. Phys. J. C **37**, 173 (2004).
 - [273] K. Azizi, R. Khosravi and F. Falahati, “Exclusive $D_s \rightarrow (\eta, \eta') l \nu$ decays in light cone QCD”, J. Phys. G **38**, 095001 (2011).
 - [274] N. Offen, F. A. Porkert and A. Schäfer, “Light-cone sum rules for the $D_{(s)} \rightarrow \eta^{(\prime)} l \nu_l$ form factor”, Phys. Rev. D **88**, 034023 (2013).
 - [275] U.-G. Meißner and W. Wang, “Generalized Heavy-to-Light Form Factors in Light-Cone Sum Rules”, Phys. Lett. **B730**, 336 (2014).
 - [276] G. Duplancic and B. Melic, “Form factors of B , $B_s \rightarrow \eta(\prime)$ and D , $D_s \rightarrow \eta(\prime)$ transitions from QCD light-cone sum rules”, JHEP **11**, 138 (2015).
 - [277] Y.-L. Wu, M. Zhong and Y.-B. Zuo, “ $B_{(s)}, D_{(s)} \rightarrow \pi, K, \eta, \rho, K^*, \omega, \phi$ Transition Form Factors and Decay Rates with Extraction of the CKM parameters $|V_{ub}|$, $|V_{cs}|$, $|V_{cd}|$ ”, Int. J. Mod. Phys. A **21**, 6125 (2006).
 - [278] H.-B. Fu, X. Yang, R. Lü, L. Zeng, W. Cheng and X.-G. Wu, “The $D \rightarrow \rho$ transition form factors within the QCD light-cone sum rules and the D -meson semileptonic decays $D^0 \rightarrow \rho^- e^+ \nu_e$ and $D^+ \rightarrow \rho^0 e^+ \nu_e$ ”, (2018), [arXiv:1808.06412](https://arxiv.org/abs/1808.06412).
 - [279] J. Charles, A. Le Yaouanc, L. Oliver, O. Pene and J. C. Raynal, “Heavy to light form-factors in the heavy mass to large energy limit of QCD”, Phys. Rev. D **60**, 014001 (1999).
 - [280] D. Melikhov and B. Stech, “Weak form-factors for heavy meson decays: An Update”, Phys. Rev. D **62**, 014006 (2000).
 - [281] T. Palmer and J. O. Eeg, “Form factors for semileptonic D decays”, Phys. Rev. D **89**, 034013 (2014).
 - [282] J. Bijnens and I. Jemao, “Vector Formfactors in Hard Pion Chiral Perturbation Theory”, Nucl. Phys. **B846**, 145 (2011).
 - [283] S. Fajfer and J. F. Kamenik, “Charm meson resonances in $D \rightarrow P \ell \nu$ decays”, Phys. Rev. D **71**, 014020 (2005).
 - [284] S. Fajfer and J. F. Kamenik, “Charm meson resonances and $D \rightarrow V$ semileptonic form-factors”, Phys. Rev. D **72**, 034029 (2005).
 - [285] Z.-T. Wei, H.-W. Ke and X.-F. Yang, “Interpretation of the “ f_{D_s} puzzle” in SM and beyond”, Phys. Rev. D **80**, 015022 (2009).
-

-
- [286] R. C. Verma, “Decay constants and form factors of s-wave and p-wave mesons in the covariant light-front quark model”, *J. Phys. G* **39**, 025005 (2012).
 - [287] H.-Y. Cheng and X.-W. Kang, “Branching fractions of semileptonic D and D_s decays from the covariant light-front quark model”, *Eur. Phys. J. C* **77**, 587 (2017).
 - [288] T. Sekihara and E. Oset, “Investigating the nature of light scalar mesons with semileptonic decays of D mesons”, *Phys. Rev. D* **92**, 054038 (2015).
 - [289] T. Branz, A. Faessler, T. Gutsche, M. A. Ivanov, J. G. Korner and V. E. Lyubovitskij, “Relativistic constituent quark model with infrared confinement”, *Phys. Rev. D* **81**, 034010 (2010).
 - [290] M. Ablikim *et al.* (BESIII Collaboration), “Search for the rare decay $D^+ \rightarrow D^0 e^+ \nu_e$ ”, *Phys. Rev. D* **96**, 092002 (2017).
 - [291] H.-B. Li and M.-Z. Yang, “Rare Semileptonic Decays of Heavy Mesons with Flavor SU(3) Symmetry”, *Eur. Phys. J. C* **59**, 841 (2009).
 - [292] S. Faller and T. Mannel, “Light-Quark Decays in Heavy Hadrons”, *Phys. Lett. B* **750**, 653 (2015).
 - [293] N. R. Soni and J. N. Pandya, “Decay $D \rightarrow K^{(*)} \ell^+ \nu_\ell$ in covariant quark model”, *Phys. Rev. D* **96**, 016017 (2017).
 - [294] N. R. Soni, M. A. Ivanov, J. G. Körner, J. N. Pandya, P. Santorelli and C. T. Tran, “Semileptonic $D_{(s)}$ -meson decays in the light of recent data”, *Phys. Rev. D* **98**, 114031 (2018).
 - [295] J. A. M. Vermaseren, “The FORM project”, *Nucl. Phys. Proc. Suppl.* **183**, 19 (2008).
 - [296] R. P. Feynman, “Space - time approach to quantum electrodynamics”, *Phys. Rev.* **76**, 769 (1949), [,99(1949)].
 - [297] W.-P. Chen, Y.-C. Chen, T.-W. Chiu, H.-Y. Chou, T.-S. Guu and T.-H. Hsieh (TWQCD Collaboration), “Decay Constants of Pseudoscalar D -mesons in Lattice QCD with Domain-Wall Fermion”, *Phys. Lett. B* **736**, 231 (2014).
 - [298] Z.-G. Wang, “Analysis of the masses and decay constants of the heavy-light mesons with QCD sum rules”, *Eur. Phys. J. C* **75**, 427 (2015).
 - [299] R. J. Dowdall, C. T. H. Davies, G. P. Lepage and C. McNeile, “ V_{us} from π and K decay constants in full lattice QCD with physical u , d , s and c quarks”, *Phys. Rev. D* **88**, 074504 (2013).
 - [300] H. Na, C. T. H. Davies, E. Follana, G. P. Lepage and J. Shigemitsu, “The $D \rightarrow K, l\nu$ Semileptonic Decay Scalar Form Factor and $|V_{cs}|$ from Lattice QCD”, *Phys. Rev. D* **82**, 114506 (2010).

-
- [301] D. Becirevic, V. Lubicz, F. Sanfilippo, S. Simula and C. Tarantino, “D-meson decay constants and a check of factorization in non-leptonic B-decays”, JHEP **02**, 042 (2012).
 - [302] P. Ball, G. W. Jones and R. Zwicky, “ $B \rightarrow V\gamma$ beyond QCD factorisation”, Phys. Rev. D **75**, 054004 (2007).
 - [303] W. Sun, A. Alexandru, Y. Chen, T. Draper, Z. Liu, Y.-B. Yang and Yang (QCD Collaboration), “Anatomy of the ρ resonance from lattice QCD at the physical point”, Chin. Phys. C **42**, 063102 (2018).
 - [304] B. Chakraborty, C. T. H. Davies, G. C. Donald, J. Koponen and G. P. Lepage (HPQCD Collaboration), “Nonperturbative comparison of clover and highly improved staggered quarks in lattice QCD and the properties of the ϕ meson”, Phys. Rev. D **96**, 074502 (2017).
 - [305] M. Wirbel, B. Stech and M. Bauer, “Exclusive Semileptonic Decays of Heavy Mesons”, Z. Phys. C **29**, 637 (1985).
 - [306] M. A. Ivanov, J. G. Körner and C. T. Tran, “Exclusive decays $B \rightarrow \ell^-\bar{\nu}$ and $B \rightarrow D^{(*)}\ell^-\bar{\nu}$ in the covariant quark model”, Phys. Rev. D **92**, 114022 (2015).
 - [307] T. Gutsche, M. A. Ivanov, J. G. Körner, V. E. Lyubovitskij, P. Santorelli and N. Habyl, “Semileptonic decay $\Lambda_b \rightarrow \Lambda_c + \tau^- + \bar{\nu}_\tau$ in the covariant confined quark model”, Phys. Rev. D **91**, 074001 (2015), [Erratum: Phys. Rev.D91,no.11,119907(2015)].
 - [308] S. Bifani, S. Descotes-Genon, A. Romero Vidal and M.-H. Schune, “Review of Lepton Universality tests in B decays”, J. Phys. G **46**, 023001 (2019).
 - [309] M. A. Ivanov, J. G. Körner and C.-T. Tran, “Probing new physics in $\bar{B}^0 \rightarrow D^{(*)}\tau^-\bar{\nu}_\tau$ using the longitudinal, transverse, and normal polarization components of the tau lepton”, Phys. Rev. D **95**, 036021 (2017).
 - [310] Q.-Y. Hu, X.-Q. Li and Y.-D. Yang, “ $b \rightarrow c\tau\nu$ Transitions in the Standard Model Effective Field Theory”, [arXiv:1810.04939](https://arxiv.org/abs/1810.04939).
 - [311] P. Asadi, M. R. Buckley and D. Shih, “Asymmetry Observables and the Origin of $R_{D^{(*)}}$ Anomalies”, Phys. Rev. D **99**, 035015 (2019).
 - [312] N. Rajeev and R. Dutta, “Impact of vector new physics couplings on $B_s \rightarrow (K, K^*)\tau\nu$ and $B \rightarrow \pi\tau\nu$ decays”, Phys. Rev. D **98**, 055024 (2018).
 - [313] F. Feruglio, P. Paradisi and O. Sumensari, “Implications of scalar and tensor explanations of $R_{D^{(*)}}$ ”, JHEP **11**, 191 (2018).
 - [314] M. Ablikim *et al.* (BESIII Collaboration), “First measurement of the form factors in $D_s^+ \rightarrow K^0 e^+\nu_e$ and $D_s^+ \rightarrow K^{*0} e^+\nu_e$ decays”, Phys. Rev. Lett. **122**, 061801 (2019).
 - [315] T. Feldmann, P. Kroll and B. Stech, “Mixing and decay constants of pseudoscalar mesons”, Phys. Rev. D **58**, 114006 (1998).
-

-
- [316] M. Ablikim *et al.* (BESIII Collaboration), “Measurement of the form factors in the decay $D^+ \rightarrow \omega e^+ \nu_e$ and search for the decay $D^+ \rightarrow \phi e^+ \nu_e$ ”, Phys. Rev. D **92**, 071101 (2015).
- [317] M. Ablikim *et al.* (BESIII Collaboration), “Study of the $D^0 \rightarrow K^- \mu^+ \nu_\mu$ dynamics and test of lepton flavor universality with $D^0 \rightarrow K^- \ell^+ \nu_\ell$ decays”, Phys. Rev. Lett. **122**, 011804 (2019).
- [318] M. Ablikim *et al.* (BESIII Collaboration), “Measurement of the branching fraction for the semi-leptonic decay $D^{0(+)} \rightarrow \pi^{-(0)} \mu^+ \nu_\mu$ and test of lepton universality”, Phys. Rev. Lett. **121**, 171803 (2018).
- [319] M. Ablikim *et al.* (BESIII Collaboration), “Study of the decay $D^0 \rightarrow \bar{K}^0 \pi^- e^+ \nu_e$ ”, Phys. Rev. D **99**, 011103 (2019).
- [320] T. E. Coan *et al.* (CLEO Collaboration), “Absolute branching fraction measurements of exclusive D0 semileptonic decays”, Phys. Rev. Lett. **95**, 181802 (2005).
- [321] M. Ablikim *et al.* (BESIII Collaboration), “First Observation of $D^+ \rightarrow f_0(500) e^+ \nu_e$ and Improved Measurements of $D \rightarrow \rho e^+ \nu_e$ ”, Phys. Rev. Lett. **122**, 062001 (2019).
- [322] S. Dobbs *et al.* (CLEO Collaboration), “First Measurement of the Form Factors in the Decays $D^0 \rightarrow \rho^- e^+ \nu_e$ and $D^+ \rightarrow \rho^0 e^+ \nu_e$ ”, Phys. Rev. Lett. **110**, 131802 (2013).
- [323] D. Scora and N. Isgur, “Semileptonic meson decays in the quark model: An update”, Phys. Rev. D **52**, 2783 (1995).
- [324] M. Ablikim *et al.* (BESIII Collaboration), “Analysis of $D^+ \rightarrow \bar{K}^0 e^+ \nu_e$ and $D^+ \rightarrow \pi^0 e^+ \nu_e$ semileptonic decays”, Phys. Rev. D **96**, 012002 (2017).
- [325] M. Ablikim *et al.* (BESIII Collaboration), “Improved measurement of the absolute branching fraction of $D^+ \rightarrow \bar{K}^0 \mu^+ \nu_\mu$ ”, Eur. Phys. J. C **76**, 369 (2016).
- [326] M. Ablikim *et al.* (BESIII Collaboration), “Study of the decays $D^+ \rightarrow \eta^{(\prime)} e^+ \nu_e$ ”, Phys. Rev. D **97**, 092009 (2018).
- [327] J. Yelton *et al.* (CLEO Collaboration), “Studies of $D^+ \rightarrow \eta', \eta, \phi e^+ \nu_e$ ”, Phys. Rev. D **84**, 032001 (2011).
- [328] J. Hietala, D. Cronin-Hennessy, T. Pedlar and I. Shipsey, “Exclusive D_s semileptonic branching fraction measurements”, Phys. Rev. D **92**, 012009 (2015).
- [329] M. Ablikim *et al.* (BESIII Collaboration), “Measurements of the branching fractions for the semi-leptonic decays $D_s^+ \rightarrow \phi e^+ \nu_e, \phi \mu^+ \nu_\mu, \eta \mu^+ \nu_\mu$ and $\eta' \mu^+ \nu_\mu$ ”, Phys. Rev. D **97**, 012006 (2018).

-
- [330] M. Ablikim *et al.* (BESIII Collaboration), “Measurements of the absolute branching fractions for $D_s^+ \rightarrow \eta e^+ \nu_e$ and $D_s^+ \rightarrow \eta' e^+ \nu_e$ ”, Phys. Rev. D **94**, 112003 (2016).
 - [331] M. Ablikim *et al.* (BES Collaboration), “Direct measurement of the branching fraction for the decay of $D^+ \rightarrow \bar{K}^0 e^+ \nu_e$ and determination of $\Gamma(D^0 \rightarrow K^- e^+ \nu_e)/\Gamma(D^+ \rightarrow \bar{K}^0 e^+ \nu_e)$ ”, Phys. Lett. **B608**, 24 (2005).
 - [332] S. Dobbs *et al.* (CLEO Collaboration), “A Study of the semileptonic charm decays $D^0 \rightarrow \pi^- e^+ \nu_e$, $D^+ \rightarrow \pi^0 e^+ \nu_e$, $D^0 \rightarrow K^- e^+ \nu_e$, $D^+ \rightarrow \bar{K}^0 e^+ \nu_e$ ”, Phys. Rev. D **77**, 112005 (2008).
 - [333] J. Yelton *et al.* (CLEO Collaboration), “Absolute Branching Fraction Measurements for Exclusive D_s Semileptonic Decays”, Phys. Rev. D **80**, 052007 (2009).
 - [334] J. G. Körner and G. A. Schuler, “Exclusive Semileptonic Heavy Meson Decays Including Lepton Mass Effects”, Z. Phys. C **46**, 93 (1990).