

Publications of Peter David Jarvis

§1. Journal articles

- 1 Jarvis P D *On a solution of the $U(n) \supset O(n)$ state labelling problem, for two-rowed representations.* J Phys **A7** (1974) 1804-16
- 2 Delbourgo R and Jarvis P D *The Bethe-Salpeter equation in super-field theory.* J Phys **G1** (1975) 791-99
- 3 Jarvis P D *Massive and massless supersymmetry: multipletstructure and unitary irreducible representations.* J Math Phys **17** (1976) 916-22
- 4 Jarvis P D *Partial wave analysis for supersymmetric scattering amplitudes.* J Math Phys **18** (1977) 551- 63
- 5 Barnes K J, Jarvis P D and Ketley I J *A calculation of $SO(8)$ Clebsch-Gordon coefficients.* J Phys **A11** (1978) 1025-43
- 6 Jarvis P D *New flavours, internal parity and the quark line rule for new $Q\bar{Q}$ systems.* J Phys **G4** (1978) 1809- 17
- 7 Jarvis P D *Symmetry breaking and tensor operator techniques.* J Phys **A12** (1979) 1-20
- *8 Jarvis P D *A parafermion generalisation of Poincaré supersymmetry.* Aust J Phys **31** (1978) 461-69
- 9 Barnes K J, Dondi P H, Jarvis P D and Ketley I J *Are the Ψ particles precociously narrow?* Phys Lett **80B** (1979) 302-5
- 10 Barnes K J, Dondi P H, Jarvis P D and Ketley I J *Hadronic and electromagnetic widths of mesons in the style schemes.* J Phys **G5** (1979) 649-55
- 11 Barnes K J, Ketley I J and Jarvis P D *An orthogonal way: a synthesis for hadrons and leptons.* J Phys **G5** (1979) 1-33
- *12 Jarvis P D and Green H S *Casimir invariants and characteristic identities for the graded general linear, special linear and orthosymplectic Lie algebras.* J Math Phys **20** (1979) 2115-22
- *13 Dondi P H and Jarvis P D *A supersymmetric Weinberg-Salam model.* Phys Lett **84B** (1979) 75-78. Erratum **87B** (1979) 403
- 14 Bowler K C, Corvi P J, Hey A J G and Jarvis P D *Is the Δ D35(1925) resonance evidence for new hadronic degrees of freedom?* Phys Rev Lett **45** (1980) 97-100
- *15 Dondi P H and Jarvis P D *Assignments in strong-electroweak unified models with internal and spacetime supersymmetry.* Z Phys **C4** (1980) 201-5
- *16 Bowler K C, Corvi P J, Hey A J G, Jarvis P D and King R C *The role of $Sp(12,R)$ in the Harmonic Oscillator Quark model.* Phys Rev **D24** (1981) 197-215
- 17 Delbourgo R and Jarvis P D *Dimensional reduction and axial anomalies.* J Phys **G6** (1980) L115-18
- 18 Delbourgo R and Jarvis P D *Axial anomalies by dimensional reduction.* J Phys **G7** (1981) 263-68
- *19 Dondi P H and Jarvis P D *Diagram and superfield techniques in the classical superalgebras.* J Phys **A14** (1981) 547-63
- 20 Jarvis P D and Murray M K *Casimir invariants and characteristic identities for strange superalgebras.* J Math Phys **24** (1983) 1705-10

- 21** Jarvis P D *Local internal supersymmetry of the free Maxwell theory.* Nucl Phys **B** (1982)
- ***22** Delbourgo R and Jarvis P D *Extended BRS invariance and $OSp(4/2)$ supersymmetry.* J Phys **A15** (1982) 611-25
- 23** Delbourgo R, Jarvis P D and Thompson G *Local $OSp(4/2)$ supersymmetry and extended BRS transformations for gravity.* Phys Lett **109B** (1982) 25-27
- 24** Delbourgo R, Jarvis P D and Thompson G - *Extended BRS invariance for gravity via local $OSp(4/2)$ supersymmetry.* Phys Rev **D26** (1982) 775-86
- 25** Delbourgo R, Jarvis P D and Thompson G - *Quantized gauge theory, dimensional reduction and $OSp(4/N+2)$ supersymmetry.* J Phys **A15** (1982) 2813-17
- ***26** Green H S and Jarvis P D *Casimir invariants, characteristic identities and Young diagrams for colour algebras and superalgebras.* J Math Phys **24** (1983) 1681-87
- 27** Jarvis P D and Green H S *Generalized statistics and the Rishon Hypothesis.* Aust J Phys **36** (1983) 123-26
- 28** Farmer R J and Jarvis P D *Representations of low-rank orthosymplectic superalgebras by superfield techniques.* J Phys **A16** (1983) 473-87
- 29** Jarvis P D and Thompson G T *Generalized Slavnov-Taylor, BRST and covariance identities from the geometry of the gauge surface.* Z Phys **C26** (1984) 315-321; corrigendum **C36** (1987) 173-4
- 30** Delbourgo R, Farmer R J and Jarvis P D *Matter fields and fermions in $OSp(4/2)$ by dimensional reduction via supercoset space.* Phys Lett **123B** (1983) 319-22
- 31** Delbourgo R and Jarvis P D *A generalised Baker-Campbell-Hausdorff formula with application to coset space parametrisation.* Phys Lett **96A** (1983) 165-70
- 32** Delbourgo R and Jarvis P D *Exotic gauge potential representations and ghost counting via orthosymplectic BRS supersymmetry.* J Phys **A16** (1983) L275-8
- 33** Delbourgo R and Jarvis P D *Constrained $O(n)$ models from gauged internal $OSp(n/2)$ via BRS supersymmetry.* Phys Rev **D28** (1983) 2122-24
- 34** Farmer R J and Jarvis P D *Representations of orthosymplectic superalgebras. II - Young diagrams and weight space techniques.* J Phys **A17** (1984) 2365-87
- 35** Delbourgo R and Jarvis P D *Axial anomalies in higher dimensions by dimensional continuation.* J Phys **G10** (1984) 591-98
- 36** Delbourgo R and Jarvis P D *Gravitational contribution to the axial anomaly in higher dimensions.* Phys Lett **136B** (1984) 43-46
- ***37** Morrison I and Jarvis P D *Bose-Fermi $U(6/2j+1)$ supersymmetries and high spin anomalies.* Nucl Phys **A435** (1985) 461-476
- ***38** Jarvis P D and Stedman G E *Supersymmetry in Jahn-Teller systems.* J Phys **A17** (1984) 757-76
- 39** Jarvis P D and Farmer R J *New superfields for N - supersymmetry with central charges.* J Phys **A18** (1985) 2701-18
- 40** Jarvis P D and Stedman G E *Supersymmetry in relativistic equations for the hydrogen atom.* J Phys **A19** (1986) 1373-86
- 41** Henderson J A and Jarvis P D *The ghost spectrum of (linearised) supergravity is $OSp(4/2)$ supersymmetric.* Class Quant Grav **3** (1986) L61-L66

- 42** Delbourgo R, Jarvis P D and Thompson G *Sp(2) Invariant BRST formalism, supersymmetry and Wess-Zumino Gauges.* Mod Phys Lett **A1** (1986) 95-101
- 43** Jarvis P D, Yang Mei and Wybourne B G *Generalized Quasispin for Supergroups.* J Math Phys **28** (1987) 1192- 1197
- 44** Jarvis P D and Twisk S *Supersymmetric Quantum Mechanics and the Index Theorem for arbitrary Lorentz irreps.* Class Quant Grav **4** (1987) 539-547
- 45** Henderson J A and Jarvis P D *The CSDR approach to covariant quantization of antisymmetric tensor fields.* Class Quant Grav **4** (1987) 203-8
- ***46** Henderson J A and Jarvis P D *CSDR and one loop corrections.* Nucl Phys **B297** (1988) 539-56
- 47** Jarvis P D *The CSDR approach to covariant quantization of vielbein gauge fields.* Class Quant Grav **5** (1988) 619-26
- 48** Delbourgo R, Jarvis P D, Zhang R B and Thompson G *Gauge fixing of stringlike models via $OSp(D/2)$.* Mod Phys Lett **A3** (1988) 303-309
- 49** Jarvis P D *Coset space dimensional reduction and gauge fixing over the supercircle.* Int J Mod Phys **A4** (1989) 401- 9
- 50** Jarvis P D and Zhang R B *Affine superalgebras, unitary representations, and the Sugawara construction.* Nucl Phys **B313** (1989) 205-19
- 51** Jarvis P D and Zhang R B *Unitary Sugawara constructions for affine superalgebras.* Phys Lett **B215** (1988) 695-700
- 52** Hussain F, Thompson G and Jarvis P D *Massive and massless gauge fields of any spin and symmetry.* Phys Lett **B216** (1989) 139-44
- 53** Jarvis P D and Zhang R B *Extended Symmetries at $c=1$, coset models, and the fusion rules.* Phys Lett **B225** (1989) 112-116
- ***54** Jarvis P D *Unified Models from Gauged Supergroups. I Formalism. Unitary and Orthosymplectic Series.* J Math Phys 31 (1990) 1783-1790
- 55** Gould M D, Jarvis P D and Bracken A J *Branching Rules for a class of typical and atypical representations of $gl(m/n)$.* J Math Phys 31 (1990) 2803-2810
- 56** Jarvis P D and Zhang R B *$C = 1$ coset models and their fusion rules.* in *Yang-Baxter Equations, Conformal Invariance and Integrability in Statistical Mechanics and Field Theory*, eds M N Barber and P Pearce (World Scientific, 1990) 279-293
- ***57** Jarvis P D and White M J *Fermion Masses from Supersymmetric Dynamics in Proper Time.* Phys Rev **D43**, 4121-8 (1991).
- 58** Jarvis P D and McAnally D S *Unified Models from Gauged Supergroups. II Exceptional Series $D(2,1,\alpha)$, $G(3)$, $F(4)$.* J Math Phys **33** (1992) 399-402
- 59** Jarvis P D and McAnally D S *Unified Models from Gauged Supergroups. III The graded supercoset space $OSp(3/2)/SO(2)$.* J Math Phys **33**, 4267-4273 (1992)
- 60** Gould M D and Jarvis P D *Characteristic Identities for Kac-Moody Algebras.* Lett Math Phys **22** (1991) 91-100
- 61** Baake M, Delbourgo R and Jarvis P D *Models for Supersymmetric Quantum Mechanics.* Aust J Phys 44 (1991) 353-62
- 62** Delbourgo R, Jarvis P D and Warner R C *Grassmann coordinates and Lie Algebras for Unified Models.* J Math Phys 34 (1993) 3616

- 63** Jarvis P D, Warner R C, Yung C M and Zhang R B *BRST Cohomology for $U_q(sl(2))$* . J Phys A25 (1992) L895-L900
- 64** Baker T H and Jarvis P D *q -Deformation of Radial Problems: the Simple Harmonic Oscillator in 2D*. J Phys A26 (1993) 883-893
- 65** Jarvis P D and Yung C-M *The Schur Function Realization of Vertex Operators*. Lett Math Phys 26 (1992) 115-122
- *66** Jarvis P D and Yung C-M *Vertex Operators and Composite Supersymmetric S-functions*. J Phys A26, 1881-1900 (1993)
- 67** Lucht M W and Jarvis P D *Quasiexactly solvable problems in the path-integral formalism*. Phys Rev A47 (1993) 817-822
- *68** Jarvis P D and Yung C M *Symmetric functions and the KP and BKP hierarchies*. J Phys A26 (1993) 5905-22
- 69** Baker T H, Jarvis P D and Yung C M *Hirota Polynomials for the KP and BKP Hierarchies*. Lett Math Phys 29 (1993) 55-62
- 70** Jarvis P D and Yung C M *Determinantal forms for composite Schur and Q-functions via the boson-fermion correspondence*. J Phys A27 (1994) 903-914
- 71** Jarvis P D and Yung C M *Combinatorial description of the Fock representation of the affine Lie algebra $go(\infty)$* . Lett Math Phys 30 (1994) 45-52
- 72** Delbourgo R, Jarvis P D and Warner R C *Schizosymmetry- a new paradigm for superfield expansions*. Mod Phys Lett A9 (1994) 2305
- 73** Jarvis P D, Yung C M, Warner R C and Zhang R B *Addendum to J Phys A25 (1992) L895: The BRST operator of $U_q(sl(2))$ and real forms*. J Phys A (1994) L1787-1790
- 74** Baker T H and Jarvis P D *Quantum Superspin Chains V Rittenberg Festschrift*, Int J Mod Phys B 8 (1994) 3623-3635
- 75** Jarvis P D, Tsohantjis I *Covariant scalar representation of $iosp(d, 2/2)$ and the quantization of the scalar relativistic particle* J Physics A 29 (1996) 1-16
- 76** Bowes J, Jarvis P D *Modified Relativity from the κ -deformed Poincaré algebra* Classical and Quantum Gravity 13 (1996) 1405-1416
- 77** Hamele A M, Jarvis P D and Yung C M, *Symmetric functions, tableaux decompositions and the fermion-boson correspondence*, Journal of Mathematical and Computer Modelling 26 (1997) 149-159
- 78** Ioannis Tsohantjis, Alex C Kalloniatis, Peter D Jarvis and George Thompson, *Chord diagrams and BPHZ subtractions* Mod Phys Lett A11 (1996) 1095-1106
- 79** I Tsohantjis, A Paolucci, P D Jarvis, *On boson algebras as Hopf algebras*, J Phys A 30 (1997) 4075-4087
- *80** J D Bashford, I Tsohantjis, P D Jarvis, *A supersymmetric model for the evolution of the genetic code* Proc Nat Acad Sci USA 95 (1998) 987-992
- 81** J Bashford, I Tsohantjis, P D Jarvis, *Codon and nucleotide assignments in a supersymmetric model of the genetic code*, Phys Lett A 233 (1997) 481-488
- 82** P D Jarvis, D P Bulte, *Tunnelling of a Molecule*, Aust J Phys 51 (1998) 891-902
- 83** P D Jarvis, J W van Holten, J Kowalski-Glikman *Off Shell κ -supersymmetry of the superparticle and the spinning superparticle*, Physics Letters B 427 (1998) 427-52

- 84** Corney S P, Jarvis P D, Tsobantjis I *Covariant spinor representation of $iosp(d, 2/2)$ and the quantization of the spinning relativistic particle* J Physics A **32** (1999) 8507-35
- 85** Davis R I A, Delbourgo R, Jarvis P D *Covariance, correlation and entanglement* J Phys A **33** (2000) 1895-1914
- *86** J D Bashford and P D Jarvis, *The genetic code as a periodic table: algebraic aspects*, physics/0001066, BioSystems **57** (2000) 147-161
- 87** Davis R I A, Delbourgo R, Jarvis P D *Integrity bases for local invariants of composite quantum systems: Corrigendum to J Phys A* **33** (2000) 1895-1914, J Phys **A33** (2000) 3723 - 3725
- 88** Jarvis P D and Fienberg K S, *On schizosymmetric superfields and $sl(2/1, \mathbb{C})_{\mathbb{R}}$ supersymmetry*, J Phys **A34** (2001) 3823 - 3829
- 89** S P Corney, P D Jarvis, I Tsobantjis, D S McAnally, *Generalised scalar particle quantisation in 1+1 dimensions and $D(2, 1; \alpha)$* , J Phys **A34** (2001) 4115-4128
- 90** Booth H S, Jarvis P D and Legg G, *Algebraic solution for the vector potential in the Dirac equation*, J Phys **A34** (2001) 5667-5678
- *91** P D Jarvis and J D Bashford, *Quantum field theory and phylogenetic branching*, J Phys A **A34** (2001) L703-L707
- *92** P D Jarvis and G Rudolph, *Polynomial super- $gl(n)$ algebras*, J Phys A **A36** (2003) 5531-5555
- 93** J D Bashford and P D Jarvis, *An algebraic model of RNA duplex formation*, Biopolymers **73** (2004) 657-667
- 94** Bertfried Fauser and P D Jarvis, *A Hopf laboratory for symmetric functions*, J Phys A **A37** (2004) 1633-1663
- 95** J D Bashford, P D Jarvis, J G Sumner and M A Steel, *$U(1) \times U(1) \times U(1)$ symmetry of the Kimura 3ST model and phylogenetic branching processes*, J Phys A: Math Gen **37** (2004) L81-L89
- 96** Dascalescu, S, Jarvis, PD, Kelarev, AV, and Nastasescu, C, *On Associative Superalgebras of Matrices*, Rocky Mountain Journal of Mathematics, **34** (Summer 2004 (no. 2)) 585-598 (2004)
- 97** J G Sumner and P D Jarvis, *Entanglement invariants and phylogenetic branching*, J Math Biol (to appear) (q-bio.PE/0402007)
- 98** P D Jarvis and R B Zhang, *Resolution of the $GL(3) \supset O(3)$ state labelling problem via $O(3)$ -invariant Bethe subalgebra of the twisted Yangian*, J Phys A Lett (2005, accepted), hep-th/0411026

§2. Submitted and in preparation

P D Jarvis and J D Bashford, *Algebraic model of duplex formation I: RNA mismatches*, (preprint, 2003)

P D Jarvis and J D Bashford, *Algebraic model of duplex formation II: DNA*, (preprint, 2003)

Bertfried Fauser, P D Jarvis, Ron C King and Brian G Wybourne *New branching rules induced by plethysm*, Séminaire Lotharingien Combinatoire 53 (2005, submitted)

P D Jarvis and J G Sumner, *Plethysms, Markov groups, and phylogenetic invariants* (in preparation)

Bertfried Fauser and P D Jarvis, *The Dirichlet Hopf algebra of arithmetics*, (2005, submitted)

Bertfried Fauser and P D Jarvis, *The Hopf algebra of plethysms*, (in preparation)

P. D. Jarvis, J. D. Bashford, J. G. Sumner *Path integral formulation of phylogenetic branching processes*, J Phys A (submitted), q-bio.PE/0411047

P D Jarvis, J Kijowski, and G Rudolph, *On the Structure of the Observable Algebra of QCD on the Lattice*, J Phys A (submitted), hep-th/0412143

P.D. Jarvis, J.W. van Holten, *Conformal Fluid Dynamics*, (Jan 2005) preprint, NORDITA/UTAS-PHYS-05-, hep-th/0501237

§3. Book

Corney S P, Delbourgo, R, Jarvis P D (Editors) ‘Group22: proceedings of the XXII International Colloquium on Group Theoretical Methods in Physics’, Eds S P Corney, R Delbourgo and P D Jarvis (International Press, 1998)

§4. Published conference papers

Jarvis P D *Berezin Integration and Dimensional Reduction*. in ”Complex Differential Geometry & Supermanifolds in Strings and Fields”, eds P J M Bongaarts and R Martini (Proceedings of the 7th Scheveningen Conference, Aug 23-28 1987), Springer Lecture Notes in Physics **311** (1988) 168-174

Jarvis P D *The Jordan-Brans-Dicke Model from graded higher dimensions*. Proceedings, 5th Marcel Grossmann Conference, ed D G Blair and M J Buckingham (World Scientific, 1989)

Jarvis P D *Supersymmetric Quantum Mechanics and the Index Theorem*. Proceedings of the Centre for Mathematical Analysis, Australian National University 22 (1989) 50-81

Hussain F, Thompson G and Jarvis P D *Massive and massless gauge fields of any spin and symmetry*. 3rd Regional Conference on Mathematical Physics, Islamabad, Pakistan, 17- 24 Feb 1989 (Ed F Hussain and A Qadir, World Scientific 1990) 200-208

Delbourgo R, Jarvis P D and Warner R C *Three-Generation Models based on Five Fermionic Coordinates*. Conference on Quantum Structures. (Australian J Phys 44, 135-47 (1991))

Baker T H, Jarvis P D, McAnally D S and Yung C M *Symmetric Functions, Vertex Operators and Applications* Contributed talk, XXth ICGTMP (Osaka, 3-9 July 1994); Proceedings Ed A Arima, T Eguchi and N Nakanishi, World Scientific, 1995) pp 254-258

*Jarvis P D and McAnally D M *Generalized Characteristic Identities and Applications*. Invited talk, *Confronting the Infinite*, Green-Hurst Conference, (Adelaide, Feb 14-17 1994); Ed A L Carey, W J Ellis, P A Pearce, A W Thomas, World Scientific, 1995) pp 215-224

J D Bashford, I Tsohantjis, P D Jarvis, *Supersymmetry in the genetic code in Group21 – Physical Applications and Mathematical Aspects of Geometry, Groups and Algebras* Eds H.-D. Doebner, P. Nattermann, W.Scherer (vol 1), H.-D. Doebner, W.Scherer, C. Schulte (vol 2) (World Scientific, 1997) pp 826-831

Jarvis P D, Bracken A J, Corney S P, Tsohantjis I *Realizations of Physical Particle States via cohomologies: algebraization of BRST-BFV covariant quantization* Proceedings, *Wigsym5* Ed. P Kasperkovits (Singapore: World Scientific, 1998)

P D Jarvis, *Super-algebraisation of BFV-BRST covariant quantisation* invited talk, *Lie Theory and Its Applications in Physics II* Eds H.-D. Doebner, V.K. Dobrev & J. Hilgert (Singapore: World Scientific, 1998)

J D Bashford and P D Jarvis, *Systematics of the genetic code and anticode: history, degeneracy, supersymmetry and periodicity* in ‘Group22: proceedings of the XXII International Colloquium on Group Theoretical Methods in Physics’, Eds S P Corney, R Delbourgo and P D Jarvis (International Press, 1998)

Corney S P, Jarvis P D, McAnally D S, *The $D(2, 1; \alpha)$ particle*, in ‘Group22: proceedings of the XXII International Colloquium on Group Theoretical Methods in Physics’, Eds S P Corney, R Delbourgo and P D Jarvis (International Press, 1998)

§5. Teaching development

P D Jarvis, J E Humble, R D Watson, I A Newman, E Chelkowska and S Stack, *Evaluation of Improved Outcomes in Physics Service Courses* Uniserve workshop (Sydney, April 2000), UniServe News (2000)

P D Jarvis, J E Humble, R D Watson, I A Newman, E Chelkowska, S Stack, P Taylor and B Yaxley, *DEVILS: development and enhancement of value in learning science*, CUTSD national forum (Dec 2000)

P D Jarvis, J E Humble, R D Watson, I A Newman, E Chelkowska and S Stack, *Improved Outcomes in Physics Service Courses* Australian Institute of Physics national Congress, (Adelaide, Dec 2000)