Contents

CV - Hans Plesner Jakobsen

Born: 5 February 1949. Danish Citizen. Is married to Greta. Has 2 grown up children.

Exams and degrees

1968 High School Diploma, Aarhus Statsgymnasium
1974 Cand. Scient, AU
1976 Ph.d. M. I. T., Cambridge, Mass.
1989 Dr. Scient, KU

Employment

1974 - 1974 Kandidate instructor, AU
1974 - 1976 Kandidate stipend, AU; spent at M. I. T.
1976 - 1979 Asst. Prof., Brandeis U., Waltham, Mass.
1979 - 1982 Senior stipendium, KU
1982 - 1982 S. N. F. (Denmark) Stipend, KU
1983 - 1984 Honorary Niels Bohr Stipend (Danish Academy of Science and Letters), KU
1984 - Asso. Prof., KU

Post docs

- Tom Branson 1987–1988
- Sigmundur Gudmundsson 1993–1994
- Hechun Zhang 1995–1997
- Boris Noyvert 2006
- Abdu Wufu 2007
- Olga Behrsteyn 2014-2017

I have also advised and worked with the post docs Chiara Pagani and Herbert Lee as well as the pre doc Julia Magnusson.

Assessment committees etc.

Until about 2007, I had been a member of almost all assessment committees of the Mathematics Institute over a period for more than 20 years. Among these was the assessment committee for a professor position at KU in early 2005 that I chaired (Nest and Schlichtkrull got promoted). I have served in Ph.D. committees (Lund:2, DTU: 2, Aarhus 10?), and 2 in Copenhagen, "Del A" exams (many), and promotion committees (3 in the US, one in Sweden). I am a functioning external examiner at Aarhus and DTU and have been so for many years. Before my job as chairman I was actively refereeing and reviewing: Trans. A.M.S., J. Funct. Anal, J. Math. Phys., Comm. Math. Phys., London Math. Soc., J. reine Ang. Math., "Symmetry", Ann. Sci. Éc. Norm. Sup., Math. Scand., Canadian Mathematical Bulletin, NATO and NSF (US). I have recently resumed these duties.

Administrative duties (the most important)

1992 - 1996 Chairman of the Study Board of the Math-Econ Program
1993 - 1997 Member of the board of D.M.F. (Danish Math. Soc.); among other things, secretary for 3 years.
1994 - 2007 Vice chairman of the Ph.D. Committee of the Institute
1999 - 2006 (Ultimo) Chairman of the Mathematics Department.
2002 - 2006 Member of the Board of the FNU Research School (forskerskole) "Matematik og Anvendelser".

(Co-)organizer of meetings

I have been involved with 7 meetings at Dept of Math. Sciences U. of Copenhagen and a number of Lie Group meetings at Odense. The biggest have been

- Lie Group Symposium, 07. 11. - 12. 11. 83, Dept of Math. Sciences U. of Copenhagen
- Lie Group Symposium, 20. 04. - 25. 04. 87, Dept of Math. Sciences U. of Copenhagen
- The Orbit Method, 29. 08. - 02. 09. 88, Dept of Math. Sciences U. of Copenhagen
- Ph.d. school and workshop in non-commutative geometry, Dept of Math. Sciences U. of Copenhagen, Nov. 2–11 2005.

Conference talks, visits with talks, and colloquium talks

- International Conference on Mathematical Physics, Montreal 18. 06. - 24. 06. 76
- Lie Group Symposium, Luminy 22.06. - 28. 06. 78
- Kollokvium, Matematisk Institut KU, 14. 04. 80
- Kollokvium, Matematisk Institut OU, 22. 05. 80
- Conference and Workshop on Differential Geometric Methods in Mathematical Physics, T. U. Clausthal-Zellerfeld 23. 07. - 01. 08. 80
- Lie Group Symposium, Aarhus 26. 08. - 28. 08. 80
- Kollokvium, Matematisk Institut OU, 29. 04. 81
- Summer School on Non-Linear PDE's and Quantization Procedures and Conference on Mathematical Physics, T. U. Clausthal-Zellerfeld 06. 07. -20. 07. 81
- 1-day meeting on Lie Groups, OU 27. 01. 82
- The XIth International Colloquium on Group Theoretical Methods in Physics, Istanbul 22. 08. - 28. 08. 82 (Plenum talk)
- Kollokvium, Matematisk Institut AUC, 28. 10. 82
- Lie Group Symposium, OU 15. 03. - 17. 03. 83
- Lie Groups, San Diego 27. 08. - 02. 09. 83
- Funktional Analysis collokvium, M. I. T., 12. 10. 84
- Kollokvium, Matematisk Institut Lund, 29. 04. 84
- Enveloping algebras, Oberwolfach 03. 02. - 09. 02. 85
- Kac-Moody algebraer, Oberwolfach 21. 04. - 27. 04. 85
- Conference on Mathematical Physics, T. U. Clausthal-Zellerfeld 11. 08. - 15. 08. 85
- Lie Group Symposium, OU 04. 11. - 06. 11. 85
- Topological and Geometrical Methods in Field Theory, Espoo 08. 06. - 14. 06. 86
- Kollokvium, Matematisk Institut Göttingen, 18. 02. 87 (two weeks invited visit)
- Topological Groups, Oberwolfach 28. 06. - 04. 07. 87
- 20. Nordiske Matematikerkongres, Trondheim 22. 08. - 26. 08. 88

- Infinite dimensional Lie algebras and Lie groups, Luminy 04. 07. - 09. 07. 88
- Funktionalanalyse-kollokvium, Prag 02. 11. 88 (1 weeks invited visit)
- Funktionalanalyse-kollokvium, Paris 10. 03. 89 (1 weeks invited visit)
- Kollokvium, D. T. H., Lyngby 03. 05. 89
- Lie Group Symposium, OU 30. 05. - 31. 05. 89
- Lie Group Symposium, Amsterdam 27. 08. - 03. 09. 89
- Kollokvium, OU 09. 11. 89
- N. F. W. O. Algebra Meeting, University of Limburg, Belgien 16. 11. - 17. 11. 89
- Lie Group Symposium, C.I.R.M. Luminy–Marseille 03. 09 - 07. 09. 90
- Lie Group Symposium, Oberwolfach 28. 01. - 02. 02. 91
- Topological and Geometrical Methods in Field Theory, Turku, Finland 26.05. - 31.05.91 (also session chairman)
- Foredrag i Algebraseminaret, Aarhus 30. 04. 92
- Miniconference on Algebra, Lund 25.05.93
- Lie Group Symposium, C.I.R.M. Luminy–Marseille 30. 08 - 04. 09. 93
- Clausthal-Zellerfeld 14.08.95 - 18.08.95 (also session chairman)
- Mittag-Leffler Institute 15.10.95 - 27.10.95
- Kolloquium, Lunds Universitet 24.01.96
- Tsinghua University, Beijing, PRC, 2 weeks in October 1997.
- Wigner Symposium, Wien, 25.08.97 - 29.08.97
- Twente Lie Group Symposium 15.12.97 - 19.12.97
- Mittag-Leffler Institute October 1998
- Geometry Workshop D.T.U. June 15-16 1998
- "Special Functions and Applications", Lund 07.05.99
- Quantum Groups and Integrable Systems, Prag 22.06.00 - 26.06.00
- Workshop on Lie Groups, Bedlewo, Poland, 09.09.00 -15.09.00
- Quantum Groups and Symmetries, Krakow, 17-22 July 2001
- Vertex Operators and Kac-Moody algebras, Ramunan Institute, Madras, 28.01.02 - 02.02.02 (Plenum talk)
- "XXIV Internat'l Coll. On Group Theoretical Methods in Physics", Paris 15.07.02 - 20.07.02
- 5th Intrnl. Workshop on Lie Theory and its Applications in Physics, Varna, Bulgaria, 16 - 22 June 2003.
- Mittag-Leffler Institute October 2003
- Tsinghua University, Beijing, PRC, 2 weeks visit April 2004
- Distinguished Visitor, University of Iowa 08.10.04 - 15.10.04 (series of 4 lectures)
- Midwest Geometry Conference, U. Of Iowa 18 - 20 May 2007 (plenum talk)
- Algebra, Geometry, and Mathematical Physics, Gothenburg October 11 - 13 2007
- Oresundssymposium, November 23 2007.
- 1-day meeting at the N.B.I. Dec. 6 2008
- "Around quantum groups". Cergy-Pointoise Nov. 28 2011.
- Cergy-Pointoise Nov. 2011 5 days incl. invited talk
- Luxmbourg May 2012 5 days incl. invited talk
- Aalborg Aug. 2012 5 days incl. contr. talk
- Karlstad Sep. 2012 long weekend incl. invited talk
- Quantum Lunch Seminar Dept. of Mathematical Sciences Copenhagen Febryary 2018
- Group 32 Prague July 2018
- The Vaksman meeting, Gothenburg June 2 - 8 2019 (accepted invit.)

Main current project

Drafts, some of them crude, are available for most of these projects.

- Quantized differential operators.
- (Quantized) Cluster algebras and representation theory. How to "grow" (quantized) Schubert cells from quadratic algebras while using cluster algebra structures. Creation and annihilation operators. Applications to physics.
- Covariant differential operators and indecomposable representations.
- The Lie algebra and q analogue of the Kashiwara Vergne construction. Quantum Weyl Algebras.
- Explicit realizations of quantum symmetric spaces.
- Representations of the Heisenberg Group related to decomposable unitary representations of the Poincare Group.

Economic support

During my three years at Brandeis University I was supported by NSF (U.S.) (a "2/9-grant") and in the summer of 1980 for one month through a grant held by I.E. Segal. I have received grants from SNF and "Forskerakademiet" (both Denmark) to invite Tom Branson for a total of 2 years. I was chairman for the KUMI - group "Differential Equations, Lie Groups and og Mathematical Physics" which received kr. 321.000,- from 1989 to 1991. In 1988-89 I took active part in the forming of the research group "Topology, Geometry and Physics" and stayed a member for several years during which it evolved into "Global Analysis and Applications", chaired by Vagl Lundsgaard Hansen. It has held 4 3-year grants (each in the order of kr. 750.000) and has recently obtained yet another 3-year grant. After thst, in a period of approx. 2 years I was a member of CAALT, headed by Henning Haahr Andersen of Aarhus. Further, I have obtained 2 post doc grants from S.N.F., one for S. Gudmundsson and one for H. Zhang. I have received one post doc year from the Sino-Danish cooperation - held by Abdu Wufu. Through the LIEGRIT grant in aarhus, I got Boris Nouvert as a post doc (7 months) and Julia Magnusson as a pre doc (14 months). I have visited the Mittag-Leffler Institute 3 times for a total of 2 months and 2 weeks. I was a member of the 3 year 'SNF-centre in Non-commutative Geometry' (headed by Ryszard Nest) 2005-2007.

Publications

Everything mentioned here can be fully seen (listed in opposite order) on
`http://web.math.ku.dk/~jakobsen/web/cvweb/publ.html`

58 Quantized Covariant Differential Operators (Draft, approx. 45 pages, soon to be submitted) January 2019

57 Special Classes of Homomorphisms between generalized Verma modules for $\mathcal{U}_q(su(n,n))$ (10 pp) Submitted for the IOP Proceedings of Prague 32, Prague 2018

56 The Center of $\mathcal{U}_q(\mathfrak{n}_\omega)$, Comm. Alg. 46 262–282 (2018)

55 Double Quantum Schubert Cells and Quantum Mutations. arXiv:1501.06137v1 [math.QA] (33 pages, under revision)

54 (with C. Pagani) Quantized Matrix Algebras and Quantum Seeds, J. of Linear and Multilinear Algebra 63, 713-753 (2015)

53 (with H. Zhang) Double-partition Quantum Cluster Algebras J. Algebra 372, 172–203 (2012)

52 Indecomposable finite-dimensional representations of a class of Lie algebras and Lie superalgebras p. 125–138, In "Supersymmetry in Mathematics and Physics: UCLA Los Angeles, USA 2010". Ed. by Ferrara, Fioresi, and Varadarajan. Lecture Notes in Mathematics 2027, Sep. 2011

51 (with H. Zhang) The Exponential Nature and Positivity Algebr. Represent. Theor. 9, 267-284 (2006)

50 Matrix Chain Models and their q-deformations. In Proceedings of 5th International Workshop "Lie Theory and Its Applications in Physics", 16 - 22 June 2003, Varna, Bulgaria. 377-391

49 (with C.-W. H. Lee) Matrix Chain Models and Kac-Moody Algebras "Vertex Operators and Kac-Moody algebras". Proceedings, Madras 2002, Contemp. Math. 343, 147-165, A.M.S.

48 Quantized symmetrizations and *-products. In "Quantum Groups and Symmetries", Proceedings, Krakow, 2001, 396-403. World Scientific, Singapore.

47 (with C.-W. H. Lee) Unitary Irreducible Representations of a Lie Algebra for Matrix Chain Models. J. Math. Phys. 42, 3817–3838 (2001)

46 (with C.-W. H. Lee) Unitary Irreducible Representations of a Lie Algebra for Open Matrix Chains. In " Theoretical high energy physics; MRST 2000". AIP Conference Proceedings 541, 130-139 (2000) New York

45 Quantized Dirac operators. Czech. J. Phys. 50, 1265–1270 (2000)

44 Q-differential operators. Preprint (19pp) 1999 (http://xxx.lanl.gov/abs/math.QA/ 9907009)

43 (with S. Jøndrup) Quantized Rank R Matrices. J. Algebra 246, 70–96 (2001)

42 (with H. Zhang) Quantized Heisenberg Space. Algebras and Representation Theory 3, 151–174 (2000).

41 (with H. Zhang) A class of quadratic matrix algebras arising from the quantized enveloping algebra. J. Math. Phys. 41, 2310–2336 (2000)

40 (with H. Zhang) Cyclic representations of the quantum matrix algebras. Comm. Algebra 27, 493–510 (1999)

39 Unitarity of highest weight modules for quantum groups. Lett. Math. Phys. 42, 119–133 (1997)

38 (with A. Jensen, S. Jøndrup, and H. Zhang) Quadratic algebras of type AIII. I II III. Tsinghua Science and Technology 3, 1199–1202, 1203–1208, 1209–1212 (1998)

37 (with H. Zhang) The center of the Dipper Donkin quantized matrix algebra. Beiträge Algebra Geom. 38, 411–421 (1997)

36 (with H. Zhang) The center of the Quantized Matrix Algebra. J. Algebra 196, 458–474 (1997)

35 Differentialgeometri (Danish). Lecture notes for Geometri 3GE; 147 pp. (1996)

34 Quantized hermitian symmetric spaces. In: "Lie Theory and its Applications in Physics", 105-116, World Scientific, Singapore (1996)

33 Tensoring with small quantized representations. J. Math. Phys. 38, 4323–4335 (1997)

32 An intrinsic classification of the unitarizable highest weight modules as well as their associated varieties Compositio Math. 101, 313–352 (1996)

31 Gauss-Bonnet (In Danish) In : Famøs s- 9–17 ("Side 9 sæningen") (1994),

30 Bevægelsens Geometri (Engish: The geometry of motion). In : Naturligvis. p. 30-33 (1994)

29 The Full Set of Unitarizable Highest Weight Modules of Basic Classical Lie Superalgebras , Memoirs of the A.M.S. , Nr. 532, 116pp (1994)

28 A classification of the unitarizable highest weight modules for affine Lie superalgebras, J. Functional Analysis , 422–457 (1994)

27 (with B. Durhuus and R. Nest) Topological field theories from quantum 6j-symbols. In: "Topological and Geometrical Methods in Field Theory, Turku (1992)", 121–134, World Scientific, Singapore

26 (with B. Durhuus and R. Nest) A construction of topological quantum field theories from 6j–symbols, Nucl. Physics B (Proc. Suppl.) , 109–121 (1992)

25 (with B. Durhuus and R. Nest) Topological quantum field theories from 6j-symbols, Rev. Math. Phys. l5, 1-67 (1993)

24 (with V. Kac) A new class of unitarizable highest weight representations of infinite dimensional Lie algebras#2, jour J. Functional analysis 82, 69-90 (1989)

23 Højeste-Vægt Moduler. Tensorprodukter, Unitaritet, Differentialoperatorer. "Doktorafhandling" (Danish Doctoral Dissertation), March 1988

22 On the range of unitarity for highest weight representations of classical Lie superalgebras, In: "Symposium on Topological and Geometrical Methods in Field Theory, Espoo, 1986", 103-109, World Scientific, Singapore

21 A spin-off from highest weight representations; conformal covariants, in particular for O(3, 2), In: "Symposium on conformal groups and structures, Proceedings, Clausthal 1985", Lecture Notes in Physics 261, 253-265 (1986)

20 Conformal covariants, Publ. RIMS Kyoto University 22, 345-364 (1986)

19 (with V. Kac) A new class of unitarizable highest weight representations of infinite dimensional Lie algebras, In: "Springer Lecture Notes in Physics 226, 1-20 (1985)

18 Subspace structures of holomorphic representations. In Sixteen research reports by the Niels Bohr fellows of the royal Danish Academy of science and letters, 22-33 (1985)

17 Basic covariant differential operators on hermitian symmetric spaces, Ann. scient. Éc. Norm. Sup. 18, 421-436 (1985)

16 (with M. Harris) Covariant differential operators. In Group Theoretical Methods In Theoretical Physics, Proceedings, Istanbul 1982, 16-34. Lecture Notes in Physics 180, Springer Verlag (1983)

15 Hermitian symmetric spaces and their unitary highest weight modules , J. Functional Analysis 52, 385-412 (1983)

14 Group theoretical aspects of the chronometric theory. In Differential Geometric Methods in Mathematical Physics, Proceedings, Clausthal 1980; Lecture Notes In Mathematics bf 905, 165-169, Springer Verlag (1982)

13 The last possible place of unitarity for certain highest weight modules, Math. Ann. 256, 439-447 (1981)

12 (with M. Harris) Singular holomorphic representations and singular modular forms, Math. Ann. 259, 227-244 (1983)

11 (with S. Paneitz, I. E. Segal, B. Speh and B. Ørsted) Covariant chronogeometry and extreme distances. II: Elementary particles, Proc. Natl. Acad. Sci. U. S. A. 78, 5261-5265(1981)

10 On singular holomorphic representations, Invent. Math. 62, 67-78 (1980)

9 (with M. Kon and I. E. Segal) Angular Momentum of the cosmic background radiation, Phys. Rev. Letters 42, 1788-1791 (1979)

8 Higher order tensor products of wave equations. In Non-Commutative Harmonic Analysis, Proceedings, Marseille-Luminy France; Lecture notes in mathematics 728, 97-115, Springer Verlag (1979)

7 (with M. Vergne) Restrictions and expansions of holomorphic representations, J. Functional analysis 34, 29-53 (1979)

6 (with I. E. Segal, B. Speh, M. Vergne and B. Ørsted) Symmetry and causality properties of physical fields, Proc. Natl. Acad. Sci. U. S. A. 75 , 1609-1611 (1978)

5 Tensor products, reproducing kernels, and power series, J. Functional Analysis 31, 293-305 (1979)

4 Intertwining differential operators for Mp(n,R) and SU(n,n) , Trans. Amer. Math. Soc. 246, 311-337 (1978)

3 (with M. Vergne) Wave and Dirac operators, and representations of the conformal group, J. Functional Analysis 24, 52-106 (1977)

2 Conformal harmonic analysis and intertwining differential operators. In Group Theoretical Methods in Physics, pp. 573-576, Academic Press 1976

1 (with M. Goto) On intersecting geodesics. Preprint Series 1972/73 No. 27, Aarhus Universitet

Page 1 from Google Scholar and Overview page from ResearchGate (overleaf)

Hans Plesner Jakobsen

Matematisk Institut
Københavns Universitet

	Alle	Siden 2014
Citater	979	147
h-index	17	7
i10-indeks	21	4

TITEL	CITERET AF	ÅR
Wave and Dirac operators, and representations of the conformal group HP Jakobsen, M Vergne Journal of Functional Analysis 24 (1), 52-106	135	1977
Hermitian symmetric spaces and their unitary highest weight modules HP Jakobsen Journal of functional analysis 52 (3), 385-412	128	1983
Restrictions and expansions of holomorphic representations HP Jakobsen, M Vergne Journal of Functional Analysis 34 (1), 29-53	93	1979
A new class of unitarizable highest weight representations of infinite dimensional Lie algebras HP Jakobsen, VG Kac Non-Linear Equations in Classical and Quantum Field Theory, 1-20	89	1985
Covariant chronogeometry and extreme distances: Elementary particles IE Segal, HP Jakobsen, B Ørsted, SM Paneitz, B Speh Proceedings of the National Academy of Sciences 78 (9), 5261-5265	47	1981
A new class of unitarizable highest weight representations of infinite-dimensional Lie algebras, II HP Jakobsen, V Kac Journal of functional analysis 82 (1), 69-90	46	1989
Topological quantum field theories from generalized 6j-symbols B Durhuus, HP Jakobsen, R Nest Reviews in Mathematical Physics 5 (01), 1-67	45	1993
The last possible place of unitarity for certain highest weight modules HP Jakobsen Mathematische Annalen 256 (4), 439-447	36	1981
On singular holomorphic representations HP Jakobsen Inventiones mathematicae 62 (1), 67-78	32	1980
The full set of unitarizable highest weight modules of basic classical Lie superalgebras HP Jakobsen American Mathematical Soc.	28	1994
Basic covariant differential operators on Hermitian symmetric spaces HP Jakobsen Annales scientifiques de l'École Normale Supérieure 18 (3), 421-436	28	1985
Conformal covariants HP Jakobsen Publications of the Research Institute for Mathematical Sciences 22 (2), 345-364	27	1986

Hans Plesner Jakobsen
24.51 · Ph. D.; Dr. Scient · Edit

Add new research

RG Score
24.51

Breakdown:

- **99.88%** Publications
- **0.00%** Questions
- **0.00%** Answers
- **0.12%** Followers

Percentile:

Your score is higher than 80% of ResearchGate members'.

0% **50%** **100%**