Curriculum Vitae

C. Denson Hill

Current Position

Professor of Mathematics
Department of Mathematics
Stony Brook University

Education

Rice University 1957-1961
B.A. 1961 Mathematics
Courant Institute, NYU
M.S. 1963, PhD 1966 Mathematics

Academic Employment

Rockefeller University
Research Associate 1965-1966, Assistant Professor 1966-1967
Stanford University
Assistant Professor 1967-1973
Stony Brook University
Associate Professor 1973-1975, Full Professor 1975-present

Temporary Positions

Cornell University, summer 1964
Assistant to Professor Mark Kac
Brookhaven National Laboratory, summers 1963, 1965, 1966
Visiting Assistant Mathematician
Universita di Pisa, 1970-1971
NATO Postdoctoral Fellow
Institute for Advanced Study, Fall 1974
Visiting Member
Universita di Firenze, 1979-1980
Visiting Professor
Naval Underwater Systems Center, summers 1986, 1987
Consultant
Steklov Institute, Moscow, summer 1992
Nat. Acad. Sc. Exchange Visitor

Visits of One Month or a Few Weeks

SISSA (Trieste), IVIC (Caracas), Paris VI (Paris), Institut Fourier (Grenoble), Schroedinger Institute (Vienna), Humboldt University (Berlin), Institute for Theoretical Physics (Warsaw), Mathematics Departments at: Pisa, Firenze, Rome, Trento, Padova (Italy); Bonn, Berlin, Leipzig (Germany); Regina, London (Canada); Morellia (Mexico); Serra Negra (Brazil); Pittsburgh, San Diego, Chicago, Wisconsin (USA)

Professional Affiliations

MAA, AMS

Awards and Honors

BA degree Magna cum Laude (Rice)
Alfred P Sloan Research Fellowship (Stanford and Stony Brook)
NATO Research Fellowship (Pisa)
CNR Visiting Research Fellowship (Firenze)
National Academy of Sciences Exchange Fellow (Moscow)

Publications

*1. On the reflection of solutions of linear partial differential equations , **PhD Thesis** , Courant Institute Math. Sc., **NYU** (1966).*

*2. Parabolic equations in one space variable and the noncharacteristic Cauchy problem , **Comm. Pure Appl. Math., 20** , 3 (1967), 619-633.*

*3. A method for the construction of reflection laws for a parabolic equation , **Trans. AMS, 133** , 2 (1968), 357-372.*

*4. Existence, uniqueness, stability, and monotone dependence in a Stefan problem for the heat equation (with J. R. Cannon), **J. Math. Mech., 17** , 1 (1967), 1-20.*

*5. A multi-boundary Stefan problem and the disappearance of phases (with J. R. Cannon and J. Douglas, Jr.), **J. Math. Mech., 17** , 1 (1967), 21-34.*

*6. Remarks on a Stefan problem (with J. R. Cannon), **J. Math. Mech., 17** , 5 (1967), 433-442.*

*7. On the infinite differentiability of the free boundary in a Stefan problem (with J. R. Cannon), **J. Math. Anal. Appl., 22** , 2 (1968), 385-397.*

*8. Continuous dependence of bounded solutions of a linear parabolic partial differential equation upon interior Cauchy data , (with J. R. Cannon),**Duke Math. J., 35** , 2 (1968), 217-230.*

*9. A finite-difference method for degenerate elliptic-parabolic equations (with J. R. Cannon), **SIAM J. Numer. Anal., 5** , 2 (1968), 211-218.*

*10. On the numerical solution of degenerate elliptic-parabolic equations , **SIAM J. Numer. Anal., 5** , 4 (1968), 717-724.*

*11. Linear functionals and the Cauchy-Kowalewski theorem , **J. Math. Mech., 19** , 3 (1969), 271-278.*

*12. A hyperbolic free boundary problem , **J. Math. Anal. Appl., 31** , 1 (1970), 117-129.*

*13. A sharp maximum principle for degenerate elliptic-parabolic equations , **Indiana Univ. Math. J., 20** , 3 (1970), 213-229.*

*14. On the movement of a chemical reaction interface (with J. R. Cannon), **Indiana Univ. Math. J., 20** , 5 (1970), 429-454.*

*15. The one-phase Stefan problem for the heat equation with boundary temperature specifications (with J. R. Cannon and M. Primicerio), **Arch. Rational Mech. Anal., 39** , 4 (1970), 270-274.*

*16. Complex characteristic coordinates and tangential Cauchy-Riemann equations (with A. Andreotti), **Ann. Scuola Norm. Sup. Pisa, 26** , 2 (1972), 299-324.*

*17. E. E. Levi convexity and the Hans Lewy problem, Part I: Reduction to vanishing theorems (with A. Andreotti), **Ann. Scuola Norm. Sup. Pisa, 26**, 2 (1972), 325-363.*

*18. E. E. Levi convexity and the Hans Lewy problem, Part II: Vanishing theorems (with A. Andreotti), **Ann. Scuola Norm. Sup. Pisa, 26** , 4 (1972), 747-806.*

*19. Classical solutions in the large of a two-phase free boundary problem, I (with D. B. Kotlow), **Arch. Rational Mech. Anal., 45** , 1 (1972), 63-78.*

*20. Classical solutions in the large of a two-phase free boundary problem, II (with D. B. Kotlow), **Arch. Rational Mech. Anal., 47** , 5 (1972), 369-379.*

*21. A Kontinuitätssatz for ∂_M and Lewy extendibility , **Indiana Univ. Math. J., 22** , 4 (1972), 339-353.*

*22. A PDE in R^3 with strange behavior , **Indiana Univ. Math. J. 22** , 5 (1972), 415-517.*

*23. The Cauchy problem for ∂ , **Proc. Symp. Pure Math. (PDE), 23, AMS** , Providence, R.I. (1973), 135-143.*

*24. On the maximum modulus principle for the tangential Cauchy-Riemann equations (with J. Carlson), **Math. Ann., 208** , (1974), 91-97.*

*25. A hierarchy of nonsolvability examples , **Proc. Symp. Pure Math. (Diff. Geom.), 27, AMS** , Providence, R.I. (1975), 301-305.*

*26. Mayer-Vietoris sequences for complexes of partial differential operators (with A. Andreotti, S. Lojasiewicz, and B. MacKichan), **Bull. AMS, 82** , 3 (1976), 487-490.*

*27. The maximum modulus principle, I. Necessary Conditions (with D. Ellis and C. Seabury), **Indiana Univ. Math. J., 25** , 7 (1976), 709-715.*

*28. The maximum modulus principle for CR functions on smooth real embedded submanifolds on C^n (with D. Ellis), **Proc. Symp. Pure Math. (SCV), 30, AMS** , Providence, R.I. (1977), 139-140.*

*29. Function theory on tube manifolds (with M. Kazlow), **Proc. Symp. Pure Math. (SCV), 30, AMS** , Providence, R.I. (1977), 153-156.*

*30. The local family of analytic discs attached to a CR submanifold (with G. Taiani), **Proc. Conference on "Several complex variables and related topics in harmonic analysis"** , Cortona, Italy (1978), 166-179.*

*31. Hyperfunction cohomology classes and their boundary values (with B. MacKichan), **Ann. Scuola Norm. Sup. Pisa, 4** , 3 (1977), 577-597. [Reprinted in the volume dedicated to J. Leray, Pisa, 1979.]*

*32. Families of analytic discs in C^n with boundaries on a prescribed CR submanifold (with G. Taiani), **Ann. Scuola Norm. Sup. Pisa, 5** , 2 (1978), 327-380. [Reprinted in the volume dedicated to H. Lewy, Pisa, 1979.]*

*33. Global uniqueness in the disc lifting problem (with G. Taiani), **J. Diff. Geom., 15** (1980), 217-223.*

*34. Real analytic approximation of locally embeddable CR manifolds (with G. Taiani), **Compositio Math., 44** (1981), 113-131. [Volume dedicated to A. Andreotti.]*

*35. On the H. Lewy extension phenomenon in higher codimension (with G. Taiani), **Proc. AMS, 91** , 4 (1984), 568-572.*

*36. What is the notion of a complex manifold with a smooth boundary?, **Algebraic Analysis, Vol. 1**(Kashiwara and Kawai, ed.) Academic Press (1988), 185-201. [Volumes dedicated to M. Sato.]*

*37. The inverse problem of electroencephalography using an imaging technique for simulating cortical surface data (with R. B. Kearfott and R. D. Sidman), **Proc. 12th IMACS world Congress** (R. Vichnevetsky, P. Borne and J. Vignes, ed.), 3 (1988), 735-738.*

38. Development and application of mathematical techniques for the non invasive

localization of the sources of scalp-recorded electric potentials(with R. D. Sidman, et. al.), ***Biomedical Systems Modelling and Simulation, Vol. 5 IMACS Trans. Scientific Computing*** *(J. Eisenfeld and D. S. Levine, ed.), J. C. Baltzer AG, Basel (1988), 133-157*

39. A family of exotic structures on $S^2 X S^3$ *, in* ***Analyse Complexe Multi variable: Récents Développements*** *(A. Méril, ed.),* ***Guadalupe*** *(1988),****Edit El, Commenda di Rende*** *(1991), 105-110.*

40. The super complex Frobenius theorem (with S. R. Simanca), ***Annales Polonici Math. 55*** *(1991), 139-155.*

41. Numerical tests of a method for simulating electrical potentials on the cortical surface (with R. B. Kearfott, R. D. Sidman, D. J. Major), ***IEEE Trans. Biomedical Eng., 38*** *,3 (1991), 294-299.*

42. Effective computation of the symmetric lens (with P. Susskind, V. Giambalvo), in ***Applied and Industrial Mathematics: Venice I*** *(R. Spigler, ed.),****Kluwer, Dordrecht*** *(1991), 351-357.*

43. The Maxwell condition in Friedmann cosmology , in ***The Math. Heritage of C. F. Gauss*** *(G. M. Rassias, ed.),* ***World Scientific, Singapore****(1991), 349-357.*

44. Counterexamples to Newlander-Nirenberg up to the boundary , ***Proc. Symp. Pure Math. (SCV), 52, AMS****, Providence, R.I. (1991), 191-197.*

45. The CIT scan (with R. D. Sidman), in ***Wave Propagation and Inversion*** *(W. E. Fitzgibbon, M. F. Wheeler, ed.),* ***SIAM*** *(1992), 34-45.*

46. An analytic disc approach to the notion of type of points (with R. Dwilewicz), ***Indiana Math. J., 41*** *(1992), 713-739.*

47. Newlander-Nirenberg theorem on supermanifolds with boundary (with S. R. Simanca), ***Riv. Mat. Univ. Parma, (5)*** *2 (1993), 213-228.*

48. A characterization of harmonic functions and points of finite and infinite type (with R. Dwilewicz), ***Indag. Mathem., 4*** *(1993), 39-50.*

49. A collar neighborhood theorem for a complex manifold (with M. Nacinovich), ***prépublication*** *de l'Institut Fourier Grenoble, n.197 (1992);* ***Rend. Sem. Mat. Univ. Padova, 91*** *(1994), 23-30.*

50. A necessary condition for global Stein immersion of compact CR manifolds (with M. Nacinovich), ***prépublication*** *de l'Institut Fourier Grenoble, n.198 (1992);* ***Riv. Mat. Univ. Parma, (5)*** *1 (1992), 175-182.*

51. Embeddable CR manifolds with nonembeddable smooth boundary (with M. Nacinovich), ***prépublication*** *de l'Institut Fourier Grenoble, n.199 (1992);* ***Boll. U.M.I., 7*** *(1993), 387-395.*

52. The topology of Stein CR manifolds and the Lefschetz theorem (with M.

*Nacinovich), **Ann. Inst. Fourier Grenoble, 43** (1993), 459-468.*

*53. The Jacobian theorem for mapping of pseudoconcave CR hypersurfaces (with M. Nacinovich), **preprint**, Dipartimento di matematica, Pisa 1.90, 767 (Oct 1993); **Boll. U.M.I., 7** (1995), 149-155.*

*54. Pseudoconcave CR manifolds (with M. Nacinovich), **preprint**, Dipartimento di matematica, Pisa 1.76, 723 (Feb 1993); in Complex Analysis and Geometry (V. Ancona, E. Ballico, A. Silva, ed.), **Lecture notes in pure and applied mathematics vol. 173, Marcel Decker, New York** (1996), 275-297.*

*55. Aneurysms of Pseudoconcave CR manifolds (with M. Nacinovich), **preprint**, Dipartimento di matematica, Pisa 1.83, 745 (June 1993); **Math. Zeitschrift 220** (1995), 347-367.*

*56. Duality and distribution cohomology of CR manifolds (with M. Nacinovich), **preprint**, Dipartimento di matematica, Pisa 1.93, 787 (Feb 1994);**Ann. Scuola Norm. Sup. Pisa, 22**, 2 (1995), 315-339.*

*57. On the Cauchy problem in complex analysis (with M. Nacinovich), **preprint**, Dipartimento di matematica, Pisa 1.103, 821 (Oct 1994); **Ann. Mat. Pura Appl. CLXXI** (1996), 159-179.*

*58. Simplicially q-pseudoconcave CR manifolds and wedge decomposition (with M. Nacinovich), **preprint**, Dipartimento di matematica, Pisa 1.113, 845 (Feb. 1995); **Sem. di Geom. Bologna 1996-1997** , 111-124.*

*59. Spinning analytic discs and domains of dependence (with R. Dwilewicz), **Manuscripta math. 97** (1998), 407-427.*

*60. Solvable Lie algebras and the embedding of CR manifolds (with M. Nacinovich), **Boll. U.M.I. 8**, 2-B (1999), 121-126.*

*61. Leray residues and Abel's theorem in CR codimension k (with M. Nacinovich), **Ann. Mat. Pura Appl. CLXXVI** (1999), 287-322.*

*62. Conormal suspensions of differential complexes (with M. Nacinovich), **preprint**, Dipartimento di matematica, Pisa 1.179.1041 (June 1977); **J. Geom. Anal. 10**, 3 (2000), 496-537.*

*63. A weak pseudoconcavity condition for abstract almost CR manifolds (with M. Nacinovich), **Inventiones Math. 142** (2000), 251-283.*

*64. Two lemmas on double complexes and their applications to CR cohomology (with M. Nacinovich), in **Selected topics in Cauchy-Riemann geometry** (ed. S. Dragomir), quarderni di matematica **vol 9**, Aracne, Caserta (2001), 125-138.*

*65. Pseudoconvexity at infinity (with M. Nacinovich), **preprint**, Dipartimento di matematica, Pisa 1,229.1228 (Feb. 2000), in **Selected topics in Cauchy-Riemann geometry** (ed. S. Dragomir), quarderni di matematica **vol 9**, Aracne, Caserta (2001),*

139-173.

66. The conormal type function for CR manifolds (with R. Dwilewicz), ***Publ. Math. Debrecen*** *(2002), 245-282.*

67. *Obstructions to generic embeddings (with J. Brinkschulte and M. Nacinovich),* ***Ann. Inst. Fourier 52****,6, Grenoble (2002), 1785-1792.*

68. On the failure of the Poincare lemma for the ∂_M *complex (with M. Nacinovich),* ***Math. Ann. 324****,6 (2002), 213-224.*

69. The Poincare lemma and local embeddability (with J. Brinkschulte and M. Nacinovich), ***Boll. U.M.I. 8****,6-B (2003), 393-398.*

70. Remarks on weakly pseudoconvex boundaries (with J. Brinkschulte and M. Nacinovich), ***Indag. Mathem. N.S., 14*** *(1) (2003), 1-10.*

71. Weak pseudoconcavity and the maximum modulus principle (with M. Nacinovich), ***Ann. Mat. Pura Appl. 182*** *(2003), 103-112.*

72. Integrability of rough almost complex structures (with M. Taylor), ***J. Geom. Anal. 12****, 1 (2003), 163-172.*

73. Fields of CR meromorphic functions (with M. Nacinovich), ***Rend. Sem. Mat. Univ. Padova, 111*** *(2004), 179-204.*

74. The H-principle and pseudoconcave CR manifolds (with E. Porten), ***Contemp. Math. 389*** *(2005), 117-123. [Proceed. Albertofest, Cuernavaca, 2004]*

75. Stein fillability and the realization of contact manifolds (with M. Nacinovich), ***Proceed. AMS 133****, 6 (2005), 1843-1850.*

76. Holomorphic correspondences between CR manifolds (with R. Shafikov), ***Indiana Univ. Math. J. 54****, 2 (2005), 417-441.*

77. Elementary pseudoconcavity and fields of CR meromorphic functions (with M. Nacinovich), ***Rend. Sem. Mat. Univ. Padova 113*** *(2005), 99-115.*

78. On the failure of the Poincare lemma for the ∂_M *complex II (with M. Nacinovich),* ***Math. Ann. 335****, 1 (2006), 193-219.*

79. The complex Frobenius theorem for rough involutive structures (with M. Taylor), ***Trans. AMS 359****, 1 (2007), 293-322.*

80. Remarks on weakly pseudoconvex boundaries: Erratum (with J. Brinkshulte and M. Nacinovich), ***Indag. Mathem. N.S. 18*** *, 1 (2007), 1-2.*

81. Twisting rays imply conformally periodic universes (with P. Nurowski), ***Class. Q. Grav. 25****, 3 (2008), 035014 (5pp) doi:10.1088/0264-9381/25/3/035014.*

82. On the Cauchy problem for the ∂ operator, Arkiv foer Mat. 46 (2008), 1-11

(with J. Brinkschulte).

*83. Einstein's equations and the embedding of 3-dimensional CR manifolds (with J. Lewandowski and P. Nurowski), **Ind. Univ. Math. J. 57**, 7 (2008), 3131-3176, math.DG, arXiv: 0709.3660.*

*84. Intrinsic geometry of oriented congruences in three dimensions (with P. Nurowski), **J. Geom. Phys. 59**, (2009), 133-172, doi:10.1016/j.geomphys.2008.10.001*

85. Malgrange's vanishing theorem for weakly pseudoconcave CR manifolds, Manuscripta Math 131 (2010) no 3-4, 503-506 (with J. Brinkschulte, M. Nacinovich)

86. Differential equations and para-CR structures, Boll. Unione Mat. Ital. (9) 3 (2010), 25-91(coauthor P. Nurowski).

87. Complex vector fields and hypoelliptic partial differential operators, Ann. Inst. Fourier 60 no3 (2010), 987-1034 (with A. Altomani, M. Nacinovich, E. Porten).

88. Holomorphic extension from weakly pseudoconcave CR manifolds, Rend. Semin. Mat. Univ. Padova 123 (2010), 69-90 (with M. Nacinovich, E. Porten).

89. Sharp version of the Goldberg-Sachs theorem, Ann. Mat. Pura Appl. (4) 190 (2011), 295-340 (with R. Gover, P. Nurowski).

90. Aldo Andreotti, Boll. Unione Mat. Ital. (9) 4 no 2 (2011), 295-299.

91. Complex vector fields, unique continuation and the maximum modulus principle, Ann. Mat. Pura Appl. (4) 191 (2012), 761-769 (withM. Nacinovich).

92. Non completely solvable systems of complex first order PDE's, Rend. Semin. Mat. Univ. Padova 129 (2013), 129-169 (with M. Nacinovich).

93. Paul Roesel Garabedian (1927-2010), Notices Amer. Math. Soc. 61 no 3 2014), 244-255 (with J. Kazdan, P. Lax, A. Novikoff, A. Jameson, E. Swenson, R. Bers, C. and E. Garabedian).

94. Obstructions to finite dimensional cohomology of abstract Cauchy-Riemann complexes, Ann. Sc. Norm. Sup. Pisa XV (2016), 343-354 (with J. Brinkschulte).

95. On the nonvanishing of abstract Cauchy-Riemann cohomology groups, Math. Ann. 363 (2016), 1-15 (with J. Brinkschulte, M. Nacinovich).

96. Inflexible CR submanifolds, Math. Zeit. 287 (2017), 461-472, doi:10.1007/s00209-016-1831-6 (with J. Brinkschulte).

97. Non locally trivializable CR line bundles over compact Lorentzian CR manifolds, Ann. Inst. Fourier 68 (2018), no. 1, *101-108 (with J. Brinkschulte).*

98. How the green light was given for gravitational wave search, Notices of AMS August (2017), 684-707 (with P. Nurowski).

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100. Lorentzian CR structures and nonembeddability, ***Manuscripta Math. 156,*** *1, (2018), 57-61 (with J. Brinkschulte).*

101. Flexible and inflexible CR submanifolds, ***Ark. Mat. 57*** *(2019), 23-33 (with J. Brinkschulte).*

102. Aspects of the Levi form, ***Boll. U.M.I.*** *(2019), Appeared online, 21 pp, (with J. Brinkschulte,J.Leiterer,M.Nacinovich).*

103. A Car as Parabolic Geometry, 25 pages, to appear in ***Abel Symposium Book 2019,*** *Springer Verlag (with P. Nurowski).*

104. A Stability Theorem for Projective CR Manifolds, submitted, 26 pages (with J. Brinkschulte, M. Nacinovich).

105. Additional work in progress with P. Nurowski.