

**CHANILLO, Sagun**

**Professor II**

**Birthdate:** 16 May 1955      **Place:** Kanpur, India

**Education:**

B.Sc., Indian Inst. of Technology, Kharagpur, 1973  
M.Sc., Indian Inst. of Technology, Kanpur, 1975  
Ph.D., Purdue University, 1980

**Positions:**

Assistant Professor, Ohio State University, 1985-87  
Associate Professor, Rutgers University, 1987-92  
Professor I, Rutgers University, 1992 – 2000  
Professor II, Rutgers University, 2000...

**Visiting Positions:**

Teaching Asst., Purdue Univ., 1975-80  
Visiting Asst. Prof., Rutgers Univ., 1980-82  
Visiting Asst. Prof., Indiana Univ., 1982-84  
Member, Institute for Advanced Study, Princeton, 1984-85, 1995-1996, 2008 Fall.  
Visiting Professor, Tata Inst. for Fundamental Research, TIFR-CAM(Bangalore),  
2004-2007, 2012-2015.

**Research Grants & Fellowships:**

NSF grant DMS-8601119  
NSF grant DMS-8803493  
NSF grant DMS-9202051  
NSF grant DMS-9401782  
NSF grant DMS-9602379  
NSF grant DMS-9970359  
NSF grant DMS-0200628  
NSF grant DMS-0600971  
NSF grant DMS-0855541

**CONFERENCES:**

**Invited Talks:**

1. Principal speaker, 4th International Conference in Harmonic Analysis and PDE, Madrid, Spain, 1992
2. Have given about 50 talks

## 3. Recent invited talks:

- (a) International Conference on Complex Analysis and Geometry, Tata Institute of Fundamental Research(TIFR), Bombay, December 1997
- (b) Principal Speaker, NSF Conference on Harmonic Analysis, Auburn University, December 1997
- (c) International Conference on PDE, Northwestern University, March 1998
- (d) Colloquium, Ohio State Univ., March 1998
- (e) International Conference on PDE, Tokyo, Japan, March 1998
- (f) AMS special session, Philadelphia, April 1998
- (g) Colloquium, Purdue Univ., February 1999
- (h) AMS summer conference on Geometry and Control, Boulder, June 1999
- (i) 10th PDE conference at IMPA, Rio de Janeiro, Brazil, July 1999
- (j) Seminar Columbia University, February 2008
- (k) Seminar Princeton University, April 2008

**Doctoral Dissertations Directed:**

Guo-Zheu Lu, 1989-1991

**PUBLICATIONS:****Journals:**

1. Hypersingular integrals and parabolic potentials (Sagun Chanillo), Trans. Amer. Math. Soc., **267** (1981), 531-547.
2. A note on commutators (Sagun Chanillo), Indiana Math. Journal, **31** (1982), 7-16.
3.  $L^p$  estimates for multiplier transformations in  $R^2$  (Sagun Chanillo), to appear.
4. On the weak behavior of partial sums of Legendre series (Sagun Chanillo), Trans. Amer. Math. Soc., **268** (1981), 367-376.
5. Distribution function estimates for Marcinkiewicz integrals and differentiability (Sagun Chanillo and R. L. Wheeden), Duke Math Journal, **49** (1982), 517-619.
6. Inequalities for Peano maximal function and Marcinkiewicz integrals (Sagun Chanillo and R. L. Wheeden), Duke Math. Journal, **50** (1983), 573-603.
7. Weighted norm inequalities for strongly singular convolution operators (Sagun Chanillo), Trans. Amer. Math. Soc., **281** (1984), 77-107.

8. Weighted  $L^p$  estimates for oscillating kernels (S. Chanillo, D. Kurtz & G. Sampson), Arkiv for matematik, **21**, (1983), 233-257.
9. A note on the maximal function of C. Fefferman and Stein (S. Chanillo and R. L. Wheeden), Proc. Amer. Soc., **88**, 509-512.
10. The multiplier for the ball and radial functions, Jour. of Functional Analysis (Sagun Chanillo, **55** (1984), 18-24.
11. Weighted weak (1,1) and weighted  $L^p$  estimates for oscillating kernels (S. Chanillo, D. Kurtz and G. Sampson), Trans. Amer. Math. Soc., **295** (1986), 127-145.
12. Sharp function and weighted  $L^p$  estimates for a class of pseudodifferential operators (S. Chanillo and A. Torchinsky), Arkiv for Math., **24** (1986), 1-25.
13. Weighted Poincare and Sobolev inequalities and estimates for weighted Peano maximal functions (S. Chanillo and R. L. Wheeden), Amer. Journal of Math., **107** (1985), 1191-1226.
14. Weak type estimates for Bochner Riesz spherical summation multipliers (S. Chanillo and B. Muckenhoupt), Trans. Amer. Math. Soc., **294** (1986), 693-703.
15.  $L^p$  estimates for fractional integrals and Sobolev inequalities with applications to Schrodinger operators (S. Chanillo and R. L. Wheeden), Comm. in PDE, **10**, (9) (1985), 693-703.
16. Some weighted norm inequalities for the area integral (S. Chanillo and R. L. Wheeden), Indiana U. Math. Jour., **36** (1987), 277-294.
17. Harnack's inequality and mean value inequalities for solutions of degenerate elliptic equations (S. Chanillo and R. L. Wheeden), Comm. PDE, **11** (10) (1986), 1111-1134.
18. Weak (1,1) bounds for oscillatory singular integrals (S. Chanillo and M. Christ), Duke Math. Jour., **55** (1987), 141-155.
19. Existence and estimates of Green's function for degenerate elliptic equations (S. Chanillo and R. L. Wheeden), Annali della Scuola Norm (Pisa), **15**, (1988), 309-340.
20. Norm inequalities for potential-type operators (with J.-O. Strömberg and R. L. Wheeden), Revista Matematica Iberoamericana, **3**, (1987) 311-335.
21. Unique continuation for  $\Delta + v$  and the C. Fefferman-Phong class (Sagun Chanillo and E. Sawyer). Trans. Amer. Math. Soc., **318**, (1990), 275-300.
22. A problem in Electrical Prospection and a  $n$ -dimensional Borg-Levinson theorem (Sagun Chanillo), Proc. Amer. Math. Soc., **108**, (1990), 761-767.

23. Nodal Geometry on Riemannian manifolds (S. Chanillo and B. Muckenhoupt), *J. Differential Geometry*, **34**(4), (1991), 85-91.
24. Weak type estimates for Cesaro sums of Jacobi polynomial series (S. Chanillo and B. Muckenhoupt), *Memoirs of the AMS*, **102** (1993), (487).
25. Poincare inequalities for a class of *non -  $A_p$*  weights (S. Chanillo and R. L. Wheeden), *Indiana Math. J.*, **41** (3), (1992), 605-623.
26. Sobolev inequalities involving divergence free maps (Sagun Chanillo), *Comm. in PDE*, **16** (10), (1991), 1969-1994.
27. Boundedness of the FBI transform on Sobolev spaces and propagation of singularities (S. Berhanu and S. Chanillo), *Comm. in PDE*, **16** (10), (1991), 1665-1686.
28. Continuity of Solutions of uniformly elliptic equations in  $\mathbf{R}^2$  (S. Chanillo and Yanyan Li), *Manuscripta Math.*, **77** (1992), 415-433.
29. Hölder and  $L^p$  estimates for local solution of  $\bar{\partial}_b$  at top degree (S. Berhanu and S. Chanillo), *Journ. Functional Analysis*, **114** (1993), 232-256.
30. Rotational Symmetry of solutions of some nonlinear problems in Statistical Mechanics and in geometry (S. Chanillo and M. Kiessling), *Comm. in Math. Phys.*, **160** (2), (1994), 217-238.
31. Some integral and maximal operators related to starlike sets (S. Chanillo, D. Watson and R. L. Wheeden), *Studia Math.*, **107** (3), (1993), 223-255.
32. On diameters of uniformly rotating stars (S. Chanillo and Y. Y. Li), *Comm. in Math. Phys.*, **166** (2), (1994), 417-430.
33. The first eigenvalue of analytic level surfaces on spheres (S. Chanillo), *Math. Research Letters*, **1** (1994), 159-166.
34. Conformally invariant systems of Nonlinear PDE of Liouville type (S. Chanillo and M. Kiessling), *Geometric and Functional Analysis, (GAFA)*, **5** (6), (1995), 924-947.
35. Symmetry of solutions of Ginzburg-Landau equations (S. Chanillo and M. Kiessling), *Comptes Rendus Acad. Sci., Paris, t.321* (1995), Serie I, 1023-1026.
36. On the lowest eigenvalue of the Hodge Laplacian, (S. Chanillo and F. Trèves), *J. Differential Geom.*, **45** (1997), 273-287.
37. Remarks on commutators of pseudo-differential operators, *Contemporary Math.*, v.205 (1997), 33-37.

38. Local Exactness in a class of differential complexes (S. Chanillo and F. Trèves), *J. Amer. Math. Soc.*, **10** (1997), 393-426.
39. Curl Free Ginzburg-Landau vortices (S. Chanillo and M. Kiessling), *Nonlinear Analysis-TMA*, **38**(8) (1999), 933-949.
40. Stable solutions of semi-linear elliptic problems in Convex domains (X. Cabré and S. Chanillo), *Selecta Math, New Ser.* 4, (1998), 1-10.
41. Surfaces with Radially symmetric prescribed Gauss curvature(S. Chanillo and M. Kiessling), *Duke Math. J.*, **105**(2), (2000), 309-353.
42. The difference in Topology at infinity in Yamabe changing sign problems on  $S^3$  ( A. Bahri and S. Chanillo), *CPAM*, **54** (2001), 450-478.
43. Symmetry breaking and related phenomena for an optimization problem for composite membranes( S. Chanillo, D. Grieser, K. Kurata, M. Imai and I. Ohnishi), *Comm. in Math. Physics*, **214** (2000), 315-337.
44. The free boundary for an optimization problem for composite membranes, (S. Chanillo, D. Grieser and K. Kurata), *Contemporary Math. of the AMS*, **268** (2000), 61-81.
45. The conformal plate buckling equation (with M. Kiessling), *CPAM*, **55** (2002), 1-27.
46. Non-linear eigenvalues and analytic hypoellipticity (with B. Helffer and A. Laptev), *J. Functional Analysis*, **209**(2004), 425-443.
47. Asymptotic Morse Theory for the equation  $\Delta v = 2v_x \wedge v_y$  (S. Chanillo and A. Malchiodi), *Comm. in Analysis and Geom.*, **13**(1)(2005), 187-251.
48. Analytic hypoellipticity and spectral problems for Schrödinger's Equation, *Contemporary Math.of AMS.*, **368**(2005), 101-120.
49. Uniqueness of solutions of Schrödinger equations on Complex Semi-simple Lie groups, *Proc. Ind. Acad. of Sciences - Math. Sciences*, **117**(3), (2007), 325-331.
50. Weak uniqueness and partial regularity in the Composite Membrane Problem (with Carlos Kenig); *J. European Math. Soc.*, **10**(3), (2008), 705-737.
51. Isoperimetric inequalities and volume comparison theorems on CR manifolds (with Paul Yang), *Annali della Scuola Norm. Sup. Pisa.*, **8**(5), (2009), 279-307.
52. The Plateau problem for the  $H$ -surface equation (with A. Malchiodi), to appear.
53. Sharp Global bounds for the Hessian on Pseudo-hermitian manifolds, (with J.J. Manfredi), *Recent Developments in Real and Harmonic Analysis: In honor of Carlos Segovia*, Birkhauser, (ISBN:0-8176-4531-4), (2010).

54. Subelliptic Bourgain-Brezis Estimates on Groups, (with J. VanSchaftingen), Math. Research Lett., **16**(3), (2009), 487-501.
55. Regularity of Minimizers in the composite membrane problem in  $\mathbb{R}^2$  (with Carlos Kenig and Tung To), (volume in honor of P.Malliavin), J. Functional Analysis **255**, (2008), 2299-2320.
56. Embeddability for Three Dimensional Cauchy-Riemann Manifolds and CR Yamabe Invariants (with H.-L.Chiu and Paul Yang), to appear in Duke Math. J.
57. An Improved Strichartz Estimate for Systems with Divergence Free Data (with Po-Lam Yung), Comm. in PDE, **37**(2), (2012), 225-233.
58. Wave Equations Associated to Liouville Systems and Constant Mean Curvature Equations (with Po-Lam Yung), submitted.
59. A Remark on the Geometry of Uniformly Rotating Stars (with Georg S. Weiss), J. Differential Eqns., **253** (2012), 553-562.

#### Conference Proceedings:

1. Relations between Peano maximal functions and Marcinkiewicz integrals (Sagun Chanillo and R. L. Wheeden), Proceedings of the Conference in Harmonic Analysis in honor of Antoni Zygmund (Wadsworth International, California 1982), **2**, 508-525.

#### Books Edited:

1. Geometric Analysis of PDE and Several Complex Variables, (eds.) S. Chanillo, P. Cordaro, N. Hanges, J. Hounie and A. Meziani, **368**(2005), Contemporary Math of the AMS.

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