

CURRICULUM VITAE : 14/JULY/15

CHRIS LENNARD

Current Position: Associate Professor, Department of Mathematics, University of Pittsburgh, Pittsburgh, Pennsylvania 15260.

EDUCATION

- (1) Ph.D. Kent State University, 1988. Dissertation Title: Operators and geometry of Banach spaces. Dissertation Advisor: Dr. J. Diestel.
- (2) M.Sc. The Flinders University of South Australia, 1984. Thesis Title: Some topological properties of symmetrically normed ideals. Supervisor: Dr. P.G. Dodds.
- (3) B.Sc.(Honours). The Flinders University of South Australia, 1978.
- (4) B.Sc. The Flinders University of South Australia, 1977.

PROFESSIONAL EXPERIENCE

- (1) Associate Professor, Department of Mathematics, University of Pittsburgh, Sep 1995-present.
- (2) Distinguished Visiting Professor, Department of Mathematics and Statistics, Miami University, Jan 2010-May 2010.
- (3) Visiting Professor, Mathematics, University of Newcastle, Australia, June 2007.
- (4) Distinguished Visiting Professor, Department of Mathematics and Statistics, Miami University, Aug 1999-Jul 2001.
- (5) Visiting Associate Professor, Department of Mathematics, Georgia Tech, Sep 1996-Jun 1997.
- (6) Assistant Professor, Department of Mathematics and Statistics, University of Pittsburgh, Sep 1989-Aug 1995.
- (7) Visiting Assistant Professor, Department of Mathematics and Statistics, University of Pittsburgh, Sep 1988-Aug 1989.

REFEREED PUBLICATIONS

- (1) P.G. Dodds and C.J. Lennard, Normality in trace ideals, *Journal of Operator Theory* 16 (1986), 127-145.
- (2) Chris Lennard, \mathcal{C}_1 is uniformly Kadec-Klee, *Proceedings of the American Mathematical Society* 109 (1990), 71-77.

- (3) N.L. Carothers, S.J. Dilworth, C.J. Lennard and D.A. Trautman, A fixed point property for the Lorentz space $L_{p,1}(\mu)$, *Indiana University Mathematics Journal* 40(1) (1991), 345-352.
- (4) Chris Lennard, A new convexity property that implies a fixed point property for L_1 , *Studia Mathematica* 100(2) (1991), 95-108.
- (5) C.J. Lennard, Extremum characterizations of sums of eigenvalues of certain symmetrizable operators on Hilbert spaces, *Journal of Mathematical Analysis and Applications* 164(1) (1992), 151-166.
- (6) Chris Lennard, A generalization of Baire's category theorem, *Journal of Mathematical Analysis and Applications* 168(2) (1992), 367-371.
- (7) P.N. Dowling and C.J. Lennard, Kadec-Klee properties of vector valued Hardy spaces, *Math. Proceedings Cambridge Phil. Soc.* 111 (1992), 535-544.
- (8) Chris Lennard, A converse to a theorem of Komlós for convex subsets of L_1 , *Pacific Journal of Mathematics* 159(1) (1993), 75-85.
- (9) P.N. Dowling and C.J. Lennard, Uniform Kadec-Klee-Huff properties of vector-valued Hardy spaces, *Math. Proceedings Cambridge Phil. Soc.* 114 (1993), 25-30.
- (10) Chris Lennard, A Baire category theorem for the domains of iterates of a linear operator, *Rocky Mountain Journal of Mathematics* 24(2) (1994), 615-627.
- (11) M. Besbes, S.J. Dilworth, P.N. Dowling and C.J. Lennard, New convexity and fixed point properties in Hardy and Lebesgue-Bochner spaces, *J. of Functional Analysis* 119(2) (1994), 340-357.
- (12) P.N. Dowling and C.J. Lennard, On uniformly H-convex complex quasi-Banach spaces, *Bulletin des Sciences Math.* 118 (1994), 455-463.
- (13) N.L. Carothers, S.J. Dilworth and C.J. Lennard, On a localization of the UKK property and the fixed point property in $L_{w,1}$, *Proc. Conf. Func. Anal., Harm. Anal. and Prob., Univ. Missouri-Columbia*, 1994, 111-124.
- (14) P.G. Dodds, T.K. Dodds, P.N. Dowling, C.J. Lennard and F.A. Sukochev, A uniform Kadec-Klee property for symmetric operator spaces, *Math. Proceedings Cambridge Phil. Soc.* 118 (1995), 487-502.
- (15) P.N. Dowling, C.J. Lennard and B. Turett, Reflexivity and the fixed point property for nonexpansive maps, *Journal of Mathematical Analysis and Applications* 200 (1996), 653-662.

- (16) S.J. Dilworth and C.J. Lennard, Uniform Kadec-Klee Lorentz spaces $L_{w,1}$ and uniformly concave functions, *Canadian Math. Bull.* 39(3) (1996), 266-274.
- (17) C.J. Kicey and C.J. Lennard, Unique reconstruction of band-limited signals by a Mallat-Zhong wavelet transform algorithm, *Journal of Fourier Analysis and Applications* 3(1) (1997), 63-82.
- (18) P.N. Dowling, W.B. Johnson, C.J. Lennard and B. Turett, The optimality of James's distortion theorems, *Proceedings of the American Mathematical Society* 125(1) (1997), 167-174.
- (19) P.N. Dowling and C.J. Lennard, Every nonreflexive subspace of $L_1[0, 1]$ fails the fixed point property, *Proceedings of the American Mathematical Society* 125(2) (1997), 443-446.
- (20) C.J. Lennard, A.M. Tonge and A. Weston, Generalised roundness and negative type, *Michigan Math. Journal* 44 (1997), 37-45.
- (21) Patrick N. Dowling, Christopher J. Lennard and Barry Turett, Asymptotically perturbed norms of classical sequence spaces with applications to fixed point theory, *Proceedings of the Conference on Fixed Point Theory*, Lublin, Poland, June 1997.
- (22) P.N. Dowling, C.J. Lennard and B. Turett, Asymptotically isometric copies of c_0 in Banach spaces, *Journal of Mathematical Analysis and Applications* 219 (1998), 377-391.
- (23) P.N. Dowling, C.J. Lennard and B. Turett, Some fixed point results in ℓ_1 and c_0 , *Nonlinear Analysis TMA* 39 (2000), 929-936.
- (24) Ole Christensen, Chris Lennard and Christine Lewis, Perturbation of frames for a subspace of a Hilbert space, *Rocky Mountain Journal of Mathematics* 30(4) (2000), 1237-1249.
- (25) C. Lennard, A. Tonge and A. Weston, Roundness and metric type, *Journal of Mathematical Analysis and Applications* 252 (2000), 980-988.
- (26) Loukas Grafakos and Chris Lennard, Characterization of $L^p(\mathbb{R}^n)$ using Gabor frames, *J. Fourier Analysis and Applications* 7(2) (2001), 101-126.
- (27) P.N. Dowling, C.J. Lennard and B. Turett, The fixed point property for subsets of some classical Banach spaces, *Nonlinear Analysis TMA* 49(1) (2002), 141-145.

- (28) P.N. Dowling, C.J. Lennard and B. Turett, Characterizations of weakly compact sets and new fixed point free maps in c_0 , *Studia Mathematica* 154 (3) (2003), 277-293.
- (29) P.N. Dowling, C.J. Lennard and B. Turett, Some more examples of subsets of c_0 and $L^1[0, 1]$ failing the fixed point property, *Proceedings Southern Illinois, Edwardsville, Function Space Conference, Summer 2002, Contemporary Mathematics* 328 (2003), 171-176.
- (30) P.N. Dowling, C.J. Lennard and B. Turett, Weak compactness is equivalent to the fixed point property in c_0 , *Proceedings of the American Mathematical Society* 132(6) (2004), 1659-1666
- (31) Anna Kamińska, Chris Lennard, Mieczysław Mastyło and Sylwia Mikulska, The uniform Kadec-Klee property for Orlicz-Lorentz spaces, *Mathematical Proceedings of the Cambridge Philosophical Society*, 143 (2007), 349-374.
- (32) P.N. Dowling, C.J. Lennard and B. Turett, New fixed point free non-expansive maps on weakly compact, convex subsets of $L^1[0, 1]$, *Studia Mathematica* 180 (2007), 271-284.
- (33) Maria A. Japón Pineda and Chris Lennard, Second dual projection characterizations of three classes of L_0 -closed, convex, bounded sets in L_1 , *Journal of Mathematical Analysis and Applications* 342 (2008), 1-16.
- (34) Chris Lennard and Dan Radelet, The Mazur product map on Hardy-type sequence spaces, *Journal of Mathematical Analysis and Applications* 350 (2009), 384-392.
- (35) Jerry B. Day and Chris Lennard, Convex Komlós sets in Banach function spaces, *Journal of Mathematical Analysis and Applications* 367 (2010), 129-136.
- (36) Jerry B. Day and Chris Lennard, A characterization of the minimal invariant sets of Alspach's mapping, *Nonlinear Analysis TMA* 73 (2010), 221-227.
- (37) P.N. Dowling, C.J. Lennard and B. Turett, Failure of the FPP inside an asymptotically isometric-free copy of c_0 , *Nonlinear Analysis TMA* 73 (2010), 1175-1179.
- (38) Chris Lennard and Veysel Nezir, The closed, convex hull of every ai c_0 -summing basic sequence fails the FPP for affine nonexpansive mappings, *J. Math. Anal. Appl.* 381(2011), 678-688.

- (39) P.N. Dowling, D. Freeman, C.J. Lennard, E. Odell, B. Randrianantoanina and B. Turett, *A weak Grothendieck compactness principle*, Journal of Functional Analysis 263 (2012), 1378-1381.
- (40) Carlos A. Hernández-Linares, Maria A. Japón, Chris Lennard, *Renormings failing to have asymptotically isometric copies of ℓ^1 or c_0* , Nonlinear Analysis 77 (2013), 112-117.
- (41) P.N. Dowling, D. Freeman, C.J. Lennard, E. Odell, B. Randrianantoanina and B. Turett, *A weak Grothendieck compactness principle for Banach spaces with a symmetric basis*, Positivity 18(1) (2014), 147-159.
- (42) Maria A. Japón, Chris Lennard and Narcisse Randrianantoanina, *Second dual projection characterizations of three classes of L_0 -closed, convex, bounded sets in L^1 : Non-commutative generalizations*, J. Math. Anal. Appl. 409(1) (2014), 13-27.
- (43) Chris Lennard and Veysel Nezir, *Reflexivity is equivalent to the perturbed fixed point property for cascading nonexpansive maps in Banach lattices*, Nonlinear Analysis TMA 95 (2014), 414-420.
- (44) A.M. Dahma and C.J. Lennard, *Generalized roundness of the Schatten class, \mathcal{C}_p* , J. Math. Anal. Appl. 412 (2014), 676-684.
- (45) Jared Burns, Chris Lennard and Jeromy Sivek, *A contractive fixed point free mapping on a weakly compact convex set*, Studia Mathematica 223(3) (2014), 275-283.
- (46) Torrey Gallagher, Chris Lennard, and Roxana Popescu, *Weak compactness is not equivalent to the fixed point property in c* , J. Math. Anal. Appl. 431 (2015) 471-481.

OTHER PUBLICATIONS

P.N. Dowling, C.J. Lennard and B. Turett, Renormings of ℓ_1 and c_0 and fixed point properties, Chapter 9, 269-297, "Handbook of Metric Fixed Point Theory", Eds. W.A. Kirk and B. Sims, Kluwer Academic Publishers 2001.

PH.D. STUDENTS

Charles Kicey (1996), Jerry Day (2007), Alfred Dahma (2009), Daniel Radelet (2009), Veysel Nezir (2012), Thomas Everest (2013), Jared Burns (2014), Jeromy Sivek (2014).

M.S. THESIS STUDENTS

Christine Lewis (1996), Asli Bektas (2010).

RECENT GRANTS

- (1) University of Pittsburgh Mathematics Research Center grant for a research visitor, Professor Maria Japón Pineda, Departamento de Análisis Matemático, Facultad de Matemáticas, University of Sevilla, Spain, 11-20 April, 2015; to give a series of three 50-minute lectures at the “*Fixed Points and Banach Spaces Seminar Series and Mini-Conference.*”
- (2) University of Pittsburgh CRDF Small Grants Program (1/July/12-30/June/14). Title: “*Fixed Point Free Nonexpansive Mappings on Weakly Compact, Convex Sets.*” This grant also funded two workshops:
 - (a) “*Fixed Points and Banach Spaces Workshop*”, on Fri 1/August/14; and
 - (b) “*Fixed Point, Banach Space and Metric Space Theory Workshop*”, on Saturday 4/October/2014.

RECENT INVITED CONFERENCE TALKS

- (1) Special Session on “Linear and Non-linear Geometry of Banach Spaces”, at the American Mathematical Society Meeting at the Washington University, St. Louis, MO, October 18-20, 2013. Title: *Recent developments in metric fixed point theory.*
- (2) Special Session on “Banach Spaces and Operators On Them”, at the American Mathematical Society Meeting at the University of Mississippi in Oxford, Mississippi, March 1-3, 2013. Title: *Reflexivity is equivalent to a perturbed asymptotically nonexpansive fixed point property in Banach lattices.*
- (3) Special Session on “Banach Spaces and Operators Between Them”, at the Canadian Mathematical Society Summer Meeting at the University of Alberta in Edmonton, Canada, June 3-5, 2011, “The closed, convex hull of every c_0 -summing basic sequence fails the FPP for affine nonexpansive mappings.”
- (4) AMS Special Session on “Geometry of Banach Spaces and Connections with Other Areas, III,” at the AMS meeting at the University of Richmond, November 6-7, 2010, “Recent results in metric fixed point theory for affine maps.”
- (5) AMS Special Session on “Nonlinear Operator Theory and Partial Differential Equations”, at the AMS meeting at the University of Alabama in Huntsville, Huntsville, Alabama, October 23-25, 2008. Talk title: “Uniform normal structure is equivalent to the Jaggi* uniform fixed point property”.

- (6) Session on “Banach Space Theory and Applications”, at the “International Conference on Interdisciplinary Mathematical and Statistical Techniques”, The University of Memphis, May 16-18, 2008. Talk title: “Recent developments in metric fixed point theory”.
- (7) AMS Special Session on “Geometry of Banach Spaces and Connections with Other Areas”, Miami, Florida, April 1-2, 2006. Title: *A characterization of frames in terms of Riesz bases*.
- (8) 50 minute invited talk at the “Meeting to Celebrate the Life and Work of Vladimir Gurariy”, March 10-11, 2006, Kent State University, Kent, Ohio. Title: *A characterization of frames in terms of Riesz bases*.
- (9) 40 minute invited talk at the Seventh International Conference on Fixed Point Theory and its Applications, July 17-23, 2005, Guanajuato, Mexico. Title: *Fixed point free nonexpansive mappings on weakly compact, convex sets in L^1* .
- (10) 30 minute invited talk at the “Conference on Infinite Dimensional Analysis”, at Kent State University, Kent, OH, February 9-13, 2005, entitled: *Fixed point free nonexpansive mappings on weakly compact, convex sets in L^1* .

RECENT INVITED OUTSIDE HOUR TALKS

- (1) June, 2014: Seminar, entitled: *Reflexivity is equivalent to a perturbed asymptotically nonexpansive fixed point property in Banach lattices*, in the Instytut Matematyki, Uniwersytet Marii Curie-Skłodowskiej, Lublin, Poland.
- (2) March, 2013: Seminar, entitled: *Reflexivity is equivalent to a perturbed asymptotically nonexpansive fixed point property in Banach lattices*, in the Mathematics Department of Miami University, Oxford, Ohio.
- (3) November, 2011: Seminar, entitled: *The closed, convex hull of every ai c_0 -summing basic sequence fails the FPP for affine nonexpansive mappings*, in the Departamento de Análisis Matemático, Facultad de Matemáticas, Universidad de Sevilla, Sevilla, Spain.

RECENT INVITED EXPOSITORY TALKS

- (1) 50-minute talk in the University of Pittsburgh Math Club’s meeting on 3/November/2014, entitled: “Persuading Indecisive Sequences and Sums to Converge.”

- (2) June 2014: A lecture series of six 45-minute lectures, entitled: “Fixed point properties and strange Banach spaces”, in the Instytut Matematyki, Uniwersytet Marii Curie-Skłodowskiej, Lublin, Poland.
- (3) 50-minute talk in the U. Pittsburgh Math Dep’t’s Research Highlights Seminar, on 11/Nov/10, entitled: “Open problems in fixed point theory in Banach spaces.”
- (4) 25-minute talk at the Annual General Meeting of the Pi Mu Epsilon Chapter at Miami U, Oxford, OH, on 24/February/2010, entitled: “ p -norms, the Steelers logo, Ohm’s Law, and more... ”
- (5) 50-minute talk in the University of Pittsburgh Math Club’s meeting on 4/November/2008, entitled: “Ideas and Insights: Inequalities, Integrals and Infinite Sums Linked to Shape and Special Relativity.”