CURRICULUM VITAE OF

Laura De Carli

(updated: February 2018)

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EDUCATION

Ph.D.	University of California-Los Angeles, (1989-- 1993)
Dottorato di Ricerca, (Ph.D)	University of Roma "La Sapienza", (1988--1993)
Bachelor in Mathematics	University of Pisa, (Italy), (1982--1987)

FULL-TIME ACADEMIC EXPERIENCE

- **Florida International University (FIU):** Assistant Professor from 8/2002 to 8/2004; associate professor from 8/2004 to 8/2014; Full professor from 2014.
- **University of Missouri – Columbia** Visiting Professor from 8/2000 to 5/2002.
- **University of Napoli "Federico II" (Italy)** Tenured Assistant Professor from 8/1993 to 10/2004.

PART-TIME ACADEMIC EXPERIENCE

- **CRM (Barcelona, Spain).** Visiting researcher from 2/1/2012 to 29/1/2012, from 5/1/2016 to 5/12/2016 and from 6/16/2017 to 7/1/2017.
- **Univ. of Missouri –Columbia** Visiting professor from 9/1/2008 to 6/1/2009 and Visiting researcher from 9/1/2004 to 11/1/2004; from 8/1/2000 to 6/1/200 and from 4/20/1999 to 5/25/1999
- **Univ. of Kyoto (Japan)** Visiting researcher from 2/5/1999 to 2/25/1999; from 2/20/1998 to 3/6/1998 and from 6/30/1997 to 6/30/1997.
- **Wright State Univ., (OH)** Visiting researcher from 3/30/1998 to 4/28/1998.
- **McMaster Univ., Canada**. Visiting researcher from 5/1/1995 to 9/30/1995

Research:

PUBLICATIONS IN DISCIPLINE

Articles Accepted/ Published in refereed journals

[32] L. De Carli, A. Mizrahi, A. Tepper Three problems on exponential bases (to appear in the Canadian Math. Bullettin)

[31] L. De Carli, P. Vellucci *p-Riesz basis and quasi-shift invariant spaces* To appear in the Contemporary Mathematics volume *"Proceedings of the AMS Special Sessions "Frames, Harmonic Analysis and Operator Theory"* edited by: Y. Kim, S. K. Narayan, G.Picioroaga, and E. Weber.

[30] L. De Carli, P. Vellucci *Stability results for Gabor frames and the p-order hold models (short version)* Linear Algebra and Its Applications 536C (2018) pp. 186—200, DOI 10.1016/j.laa.2017.09.020

[29] L. De Carli and Shaikh Goheen Samad, *One-parameter groups and discrete Hilbert transform,* Canad. Math. Bull. 59 (2016), 497-507

[28] L. De Carli, D. Gorbachev, and S. Tikhonov, *Pitt inequalities and restriction theorems for the Fourier transform* Revista Mat. Iberoamericana 33, (3) 2017, pp. 789–808. DOI: 10.4171/RMI/955

[27] L. De Carli and Z. Hu, *Parseval frames with n+1 elements in R^n* in: Methods of Fourier analysis and approximation theory, (Applied and numerical harmonic analysis) Birkhauser (2016) pp 23—32,

[26] L. De Carli, S. Hudson, *Split functions, Fourier transforms and multipliers. Collect. Math.* 66 (2015), no. 2, 297–309.

[25] L. De Carli , S. Hudson and X. Li, *Minimal potential results for the Schrodinger equation in a slab,* Forum Mathematicum, 28 (2016), no. 4, pp 689—712.

[24] L. De Carli, A. Kumar , *Exponential bases on two dimensional trapezoids, Proc. Amer. Math. Soc.* 143 (2015), no. 7, 2893–2903.

[23] L. De Carli, D. Gorbachev, and S. Tikhonov, *Pitt and Boas inequalities for Fourier and Hankel Transforms* Journal of Mathematical Analysis and Applications. Volume 408, Issue 2, 15 (2013), 762–774

[22] L. De Carli, J. Edward, S. Hudson, M. Leckband, *Minimal support results for Schrodinger's equation, Forum Math.* 27 (2015), no. 1, 343–371.

[21] L. De Carli, *On Fourier multipliers over tube domains*, Recent Advances in Harmonic Analysis and Applications (In Honor of Konstantin Oskolkov), Springer Proceedings in Mathematics (2012), 79 –92.

[20] D. Bilyk, L. De Carli, A. Petukhov, A. Stokolos and B. D. Wick , *On The Scientific Work of Konstantin Ilyich Oskolkov* , Recent Advances in Harmonic Analysis and Applications (In Honor of Konstantin Oskolkov), Springer Proceedings in Mathematics (2012)

[19] L. De Carli, S. Hudson, *A Faber-Krahn inequality for solutions of Schrodinger's equation*, Advances in Mathematics 230 (2012), pp. 2416-2427

[18] L. De Carli, S. Hudson, *A generalization of Bernoulli's inequality*, Le Matematiche 65 (2010), n. 1

[17] L. De Carli, S. Hudson, *Geometric Remarks on the Level Curves of Harmonic Functions*, Bull. London Math. Soc. 42 (2010), n. 1, 83—95 .

[16] L. De Carli, M. Ash, *Growth of L^p Lebesgue constants for convex polyhedra and other regions*, Transaction of the American Math. Soc. 361 (2009), n. 8, 4215--4232.

[15] L. De Carli, *Local L^p inequalities for Gegenbauer polynomials*, in *Topics in classical analysis and applications in honor of Daniel Waterman,* 73--87, *World Sci. Publ., Hackensack, NJ,* (2008).

[14] L. De Carli, *On the L^p-L^q norm of the Hankel transform and related operators*, J. Math. Anal. Appl. 348 (2008), n. 1, 366--382.

[13] L. De Carli, S. Hudson, *Unique continuation for nonnegative solutions of Schrödinger type inequalities.* J. Math. Anal. Appl. 318 (2006), no 2, 467--471.

[12] L. De Carli, *Uniform estimates of ultraspherical polynomials of large order* , Canadian Math. Bullettin. 48 (2005), no 3, 382—393.

[11] L. De Carli and L. Grafakos, *On the restriction conjecture*, Michigan Math. J. 52 (2004), no. 1, 163--180.

[10] L. De Carli and T. Okaji, *Strong Unique continuation for Schrodinger operator from a sphere*, Houston J. Math. 27 (2001), no. 1, 219--235.

[9] L. De Carli and E. Laeng, *On the (p,p) norm of monotonic Fourier multipliers*, C. R. Acad. Sci. Paris Sér. I Math. 330 (2000), no. 8, 657--662.

[8] L. De Carli and E. Laeng, *Truncations of weak- L^p functions and sharp L^p bounds for the segment multiplier*, Collect.Math. 51 (2000), no. 3, 309—326.

[7] L. De Carli, *Unique continuation for elliptic operators with non multiple characteristics*, Israel J. Math. 118 (2000), 15--27.

[6] L. De Carli and T. Okaji, *Strong Unique continuation for the Dirac operator*, Publ.Res. Inst. Math. Sci. 35 (1999), no. 6, 825—846.

[5] L. De Carli and A. Iosevich, *Some sharp restriction theorems for homogeneous manifolds*, J. Fourier Anal. Appl. 4 (1998), no. 1, 105--128.

[4] L. De Carli and M. Nacinovich, *Unique continuation in abstract pseudoconcave CR manifolds*, Ann. Scuola Norm. Sup. Pisa Cl. Sci. (4) 27 (1998), no. 1, 27--46.

[3] L. De Carli *Unique continuation for a class of higher order elliptic operators*, Pacific J. Math. 179 (1997), no. 1, 1--10.

[2] L. De Carli and A. Iosevich, *A restriction theorem for flat manifolds of codimension two*, Illinois J. Math. 39 (1995), no. 4, 576--585.

[1] L. De Carli, *L^p estimates for the Cauchy transform of distributions with respect to convex cones*, Rend. Sem. Mat. Univ. Padova 88 (1992), 35--53.

Other publications

- *Recent Advances in Harmonic Analysis and Applications* -In Honor of Konstantin Oskolkov. (Editor: with D. Bilyk, A. Petukhov, A. Stokolos and B.D. Wick) Springer Proceedings in Mathematics (2012).
- *Topics in Classical Analysis and Applications in Honor of Daniel Waterman*, (Editor. With K. Kazarian and M. Milman) World Scientific publishing Company (2008).
- *Interpolation theory and applications.* (Editor. with M. Milman) Proceedings of the conference in honor of Professor Michael Cwikel held in Miami, FL, March 29--31, 2006, and the Special Session of the American Mathematical Society Eastern Sectional Meeting held at Florida International University, Miami, FL, April 1--2, 2006. Contemporary Mathematics, 445. American Mathematical Society.

Papers submitted for publication

[33] L. De Carli, D. Gorbachev, and S. Tikhonov, *Weighted gradient inequalities and unique continuation problems*

[34] L. De Carli *Exponential bases on multi-rectangles of Rd*

Work in progress

- L. De Carli *Stability of exponential bases on d-dimensional domains*
- L. De Carli, J. Edward, *New bases from old*

Talks at colloquia and conferences (last 15 years)

- Febr. 2018. Univ. Missouri-Columbia, Colloquium talk. *Title: Three problems on exponential bases.*
- Sept. 2017, AMS sectional meeting, Orlando (FL). Invited speaker in the Special Session on Applied Harmonic Analysis: Frames, Samplings and Applications. *Title "p- Riesz bases on quasi shift invariant spaces"*
- Aug. 2017. Cimpa school, Buenos Aires. Keynote speaker. Title *" Many questions and few answers on exponential bases".*
- July 2017: MCA, Montreal. Invited speaker in the session "Harmonic analysis and inverse problems". *Title "p- Riesz bases on quasi shift invariant spaces"*
- June 2017: CRM (Barcelona) Follow-up workshop on Function spaces and high-dimensional approximation. Invited speaker. Title: *"Exponential bases on multi-rectangles in R^d"*
- Febr. 2017: Fourier talks, Univ. Maryland (Baltimore). Title: *Stability for the n-order hold models*
- Jan. 2017: Contributed talk at the joint mathematical meeting (JMM), Atlanta (GA). *Title: Stability for the n-order hold models*
- Vanderbilt University (Nashville), Sept. 2016. Colloquium talk. Title: *Exponential bases in R^d.*
- Centro de Recerca Matematica (Barcelona) May 2016. Invited speaker at the "workshop in Function spaces and high dimensional approximation", Title: *Exponential bases on rectangles in R^d*
- Vanderbilt University (Nashville), Nov. 2015. Colloquium talk. Title: *New bases from old*
- Florida Atlantic University (Boca Raton) Sept. 2015. Colloquium talk. Title: *New bases from old*
- Univ. Missouri (Columbia) May 2015. Colloquium talk. Title: *Semigroup of operators and discrete Hilbert transform***.**

- Oaxaca (Mexico) July 2015. Invited speaker at the conference CMO-BIRS 15w5088: Applied Functional Analysis. Title: *From exponential bases to the discrete Hilbert transform*
- Florida Atlantic University (Boca Raton) July 2015. Invited speaker and co-organizer of the conference in honor of Yoram Sagher. Title: *Pitt inequalities and restriction theorems*
- City College of New York, June 2015. Invited speaker at the International Conference on Harmonic Analysis and Applications. Title: *From exponential bases to the discrete Hilbert transform*
- University of South Florida (Tampa), Apr. 2014. Colloquium talk. Title: *From exponential bases to the discrete Hilbert transform*
- Univ. Alabama (Birmingham), January 2014. Colloquium talk. Title: *Pitt inequalities and restriction theorems.*
- Bar-Ilan University (Tel Aviv), June 2014. Colloquium talk. Title: *Stability theorem for exponential bases*
- Tecnion (Haifa), June 2014. Colloquium talk. Title: *Minimal support result for Shrodinger equations in a slab*
- Univ. Of Arizona (Tucson), March 2014, Colloquium talk. Title: *Stability theorems for exponential bases on domains of R^d*
- Nova Southeastern Univ (Ft. Lauderdale) Nov. 2013. Math Colloquium series. Title: *"Problems and applications in finite frame theory"*
- Krakov (Poland), Aug. 2013. Invited speaker at the conference "Isaac 2013" in the special session "Harmonic analysis and approximation". Title: *"Split functions, Fourier transfrorm and multipliers"*.
- Roosevelt Univ. (Chicago) Nov. 2012. Contributed talk at the conference "Special Functions, Partial Differential Equations and Harmonic Analysis, a conference in honor of Calixto P. Calderón. Title: *Exponential bases for two dimensional trapezoids*
- Centro de Recerca Matematica (Barcelona) Febr. 2012 Colloquium talk. Title: *Minimal support results for Schrodinger equations.*
- Univ. of Missouri (Columbia), May 2011. Colloquium talk. Title: *Minimal support results for Schrodinger equations.*
- Georgia Southern Univ., (Statesboro), March 2010. Colloquium talk. Title: *On the L^p behavior of the Fourier transform of the characteristic function of the union of two intervals*.
- Florida Atlantic Univ. (Boca Raton), Nov. 2009. Contributed talk at the AMS sectional meeting. Title: *A generalization of Bernoulli's inequality.*
- Univ. Kansas (Lawrence), Nov 2008. Prairie Analysis seminar. Title: *On the level set of harmonic functions.*
- Univ. of Missouri (Columbia), Nov. 2008. Analysis seminar (2 lectures). *On the level set of harmonic functions*
- Merida, (Mexico), Febr. 2008. Invited speaker at the Workshop in Harmonic Analysis and partial differential equations. *From hypercontractivity to best constans.*
- DePaul University (Chicago) Nov. 2007. Analysis seminar (3 lectures). Title: *From hypercontractivity to best constans*

- Davidson College (NC) March 2007. Contributed talk at the AMS sectional meeting. Title: *Growth of L^p Lebesgue constants for convex polyhedra and other regions.*
- Merida (Venezuela) , Jan. 2006. Invited speaker at the CIMPA school, Title: *Best constant for the Hankel transform and hypercontractivity of Laguerre semigroup.*
- DePaul University (Chicago), Dec. 2005. Contributed talk in the international conference "Harmonic Analysis and Ergodic theory" in honor of M. Ash and R. Jones in Chicago. Title: *Best constant for the Hankel transform.*
- Arizona State University (Phoenix) Dec. 2004. Colloquium talk. Title: *Reverse Holder inequalities for ultraspherical polynomials and spherical harmonics*
- DePaul Univ. (Chicago) Nov. 2004. Colloquium talk. Title: *Problems in Unique continuation*.
- Univ. of Missouri (Columbia), Oct. 2004. Colloquium talk. Title: *Reverse Holder inequalities for ultraspherical polynomials and spherical harmonics*.
- Albuquerque, (NM), Oct. 2004. Contributed talk at the AMS sectional meeting. Title: *Unique continuation for elliptic operators: a non-Carleman approach.*
- El Escorial, (Spain), June. 2004. Contributed talk at the international conference "Harmonic Analysis and Partial Differential Equations". Title: *Unique continuation for elliptic operators: a non-Carleman approach.*
- Houston, (TX), May 2004. Contributed talk at the joint meeting AMS- Sociedad Matematica Mexicana. Title: *Uniform estimates for ultraspherical polynomials.*

Master's research directed at FIU

- **2010--2012 Anudeep Kumar.** Title of the Master's project: *"Stability of Hilbert space Frames and Applications"* (original research - contained, in part, in the paper [23]). Anudeep is completing his Ph.D. in mathematics at George Washington Univ.
- **2011--2013. Zhongyuan Hu.** Title of the Master's project: *"Parseval frames in R^n"* (original research - contained, in part, in the paper [26]). After her Master's in mathematics, Zhongyuan earned a Master's in economy at FIU. She is currently a graduate student in Statistics at the Univ. Central Michigan.
- **2012—2014. Santosh Pathak.** Title of the Master's project: *Stability of exponential bases on d-dimensional domains* (original research- still in

progress). Santosh is currently a Ph.D. student in Mathematics at the Univ. New Mexico

- **2013--2015. Shuai Xu.** Title of the Master's project: " *Restriction theorems for the Fourier transform"* (original research- still in progress). Shuai is currently a graduate student in Computer sciences at FIU.
- **2013—2015. Gohin Shaikh Samad.** Title of the Master's project: *One-parameter groups and discrete Hilbert transform* (original research - contained, in part, in the paper [28]. Gohin is currently a graduate student at the Univ. Iowa)
- **2015—2017. Jorge Rivero.** Title of the master's project*: An Explicit Greedy Approximation Of Step Functions Using Waveform Dictionaries.*
- **2016—present. Alex Tepper.** He worked with me and A. Mizrahi on exponential bases on domains of R^d. Our original research is contained in the paper [32]

Undergraduate student research directed

- **2015—2017: Alberto Mizrahi** (a honor student at FIU). He worked with me and A. Tepper on exponential bases on domains of R^d. Our original research is contained in the paper [32]
- **2015—2016 David Harper.** I helped him complete the paper: "*PDEs and hypercomplex-analytic function theories " Arxiv: https://arxiv.org/abs/1609.0341*. Davis is currently a graduate student at Georgia Tec.

Funded research

- Summer 2006 and 2009. Awarded FIU Summer research grants, ($6000)
- 2012: Awarded a grant from the CRM (Centre de recerca Matematica) to take part in the "Special semester in harmonic analysis and approximation theory" at the Univ. Autonoma de Barcelona and spend a month at the CRM (approx. $7000)
- 2016: awarded a NSF Travel Award ($2,170) to participate in the Intensive Research Program (IRP) "Constructive Approximation and Harmonic Analysis" at the Centre de Recerca Matemàtica (CRM) in Barcelona, Spain, from May 1 – July 30, 2016.
- 2017: Awarded an AMS travel grant ($1350) to participate in the Mathematical Congress of the Americas in Montreal
- 2017: Awarded a NSF Travel Award ($1000) to participate in the Intensive Research Program (IRP) "Constructive Approximation and Harmonic Analysis" at the Centre de Recerca Matemàtica (CRM) in Barcelona, Spain.

PROFESSIONAL ACTIVITIES AND PUBLIC SERVICE

(1) Service to professional Associations/Societies:

- Member of the Nominating Committee of the American Mathematical society (AMS), since January 2016.
- Member of the Committee on Academic Freedom, Tenure, and Employment Security (CAFTES) of the American Mathematical society (AMS), January 2015—January 2016
- Member of the Committee meetings and conferences (CoMCo) of the American Mathematical society (AMS) from 2012 to 2015
- Chair of the CoMC focus breakfast group at the Joint Mathematical Meeting in San Diego (January 2013)

(2) Organizer of conferences

- Organizer of a special session in bases and frames in Hilbert spaces at the AMS sectional meetings at Georgetown Univ., March 2015.
- Co-organizer of special sessions in Harmonic Analysis at AMS sectional meetings, (Florida State Univ. March 2004; FIU, April 2006; DePaul University, October 2007; Georgia Southern Univ., March 2010. Albuquerque, April 2014;
- Member of the organizing committee of the AMS sectional meeting at FIU in 2006.
- Co-organizer of 8 editions of the South Florida Analysis seminar (from 2004 to 2010)
- Co-organizer of a conference in honor of D. Waterman (a satellite of the 6th South Florida Analysis seminar, Ft. Lauderdale, May 2007)
- Co-organizer of a conference in honor of M. Cwikel (a satellite of the AMS meeting at FIU, Miami, March 2006)
- Organizer of the Italian Harmonic Analysis meeting (convegnetto in analisi armonica) Sorrento, (NA), (Italy), June 2002.

(3) Editor of Proceedings

Co-editor of the volumes:

- *On The Scientic Work of Konstantin Ilyich Oskolkov*, Recent Advances in Harmonic Analysis and Applications (In Honorof Konstantin Oskolkov), Springer Proceedings in Mathematics (2012).

- *Topics in Classical Analysis and Applications* in Honor of Daniel Waterman, World Scientific publishing Company (2008).

- *Interpolation theory and applications.* Proceedings of the conference in honor of Professor Michael Cwikel held in Miami, FL, March 29--31, 2006, and the

Special Session of the American Mathematical Society Eastern Sectional Meeting held at Florida International University, Miami, FL, April 1--2, 2006. Contemporary Mathematics, 445. American Mathematical Society, Providence, RI, (2007).

(4) Referee

I have refereed over 40 papers for the Journal of Mathematical Analysis and Application (on-going collaboration) and occasionally for: Proceedings of the American Mathematical Society, American Mathematical Monthly, Journal of functional Analysis, Collectanea Mathematica.

(5) Other professional service

(a) Reviewer of the tenure and promotion file of Dr. A. Stokolos (Georgia Southern Univ.)
(b) Member of the thesis committees of N. de la Rosa (Ph.D. in education) , R. Witthaker (Ph.D. in economics) and R. Alvarez (Ph.D. in economics at FIU
(c) Reviewer of the Ph.D. thesis of P. Vellucci (Univ. Roma "La Sapienza" Italy.

University Service at FIU

(1) Service to the Department.

- I am in charge of the Department Colloquia since 2012.
- I am serving in the graduate committee since 2010.
- I have served in the hiring committee in the 2003--2004 (we succesfully hired 3 new tenure-track faculty that year), and also in the undergraduate committee, and the curriculum and scheduling committee.
- I was member of various ad-hoc committees (Ph.D program, Academic learning compact and merit).
- I am in charge of the SLO (Students learning outcome) and PO (professional outcome) reports for the Math. graduate program since 2010.

(2) Service to the School/College.

- I co-authored the Academic Learning compact for the Department of Mathematics in 2005.
- I have served in the College steering committee in 2014.

- I am a member of the college committee for diversity faculty hiring.

(3) Service to the University.

- I served in the University Graduate council in 2013 and 2014.

TEACHING

Undergraduate classes taught at FIU

- MAC 2311 (Calculus 1)
- MAC 2312 (Calculus 2)
- MAC 2313 (Multivariable Calculus)
- MAP 2302 (Differential equations)
- MAP 4990 Introduction to Fourier Analysis- experimental
- MAP 4412 (Introduction to Fourier Analysis)
- MAD 3305 (Graph theory)
- MHF 3404 (History of Math.)
- MAA 4211 Advanced Calculus
- MAT 4934 (Senior seminar)
- IDS 4920- Liberal studies colloquium (Topics In the history of modern sciences)
- MHF 4993 (History of Math II- experimental)
- MHF 4401 (Topics in the history of modern mathematics)
- MAP 4993 (Methods of applied analysis- experimental)
- MAA 4504 (Functional analysis)
- MAA 4990 (Introduction to frame theory -experimental)

Graduate classes taught at FIU

- MAP 5990 (Fourier Analysis- experimental)
- MAP 5415 (Fourier Analysis)
- MAA 5616 (Introduction to real analysis)
- MHF 5990 (Topics in modern mathematics - experimental)
- MAP 5407 (Methods of applied analysis)
- MAP 5236 (Operational research)
- MAP 5326 (Partial differential equations)
- MAA 5991 (Frame theory - experimental)
- MAP 6326 (Partial differential equations)

c. Course developed and curriculum development activities

- Graduate Fourier Analysis (MAP 5415. Experimental: MAP 5990)
- Fourier analysis (MAP 4412. Experimental MAP 4990)

- Functional Analysis (MAA 4504)
- Topics in the history of modern mathematics (MHF 4401. Experimental: MHF 5990)
- Topics in the history of modern sciences (IDS 4920 - a liberal arts colloquium)
- Frame theory (MAA 5991 - experimental)
- Introduction to Frame theory (MAA 4990 - experimental)
- Re-designed the syllabus of MHF 3404 (History of mathematics) and MHF 4401 (Topics in the history of modern mathematics) to meet the standards of the "Global Learning for Global Citizenship's" Quality Enhancement Plan.