

Contact Information:

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Education:

May 2012 **University of California, Berkeley**, California, USA. Mathematics, Ph.D.
 Advisor: [Vaughan F.R. Jones](#)
 Dissertation: “Planar structure for infinite index subfactors and strongly Markov inclusions of finite von Neumann algebras”

Visiting scholar positions:

- **Institut Henri Poincaré**, Paris, France, May-June 2011, Trimester on von Neumann algebras and ergodic theory of groups actions
- **Vanderbilt University**, Nashville, USA January-February 2011
- **University of Tokyo**, Japan, Summer 2010, NSF East Asia and Pacific Summer Institute, host researcher [Yasuyuki Kawahigashi](#)
- **Institute for the Mathematical Sciences (IMSc)**, Chennai, India, February 2009, host researcher [V.S. Sunder](#)

May 2005 **The George Washington University**, Washington, D.C., USA
 Mathematics, B.A. with Honors, May 2005.

Thesis: “A survey of hyperbolic groups acting on their Gromov boundaries”

Physics, B.S. with Honors, May 2005

Honors Project: Etching fiber optic tips for near-field scanning optical microscopy

Chemistry, B.S. with Honors, May 2005

Honors Project: Fluorescent nanoparticles ($Y_2O_3:Tb$) via alkaline reduction

Finished and published by Professor Michael Wagner and Olivera Zivkovic:

<http://pubs.rsc.org/en/Content/ArticleLanding/2008/JM/b801038b>

Awards:

- 2005 Columbian Scholar (Valedictorian). Summa Cum Laude. Science Scholars (honors program for math/science majors)
- 2005 Phi Beta Kappa
- 2003,5 Ruggles Prize in Mathematics
- 2004 Howard Hughes Fellow in Bioinformatics (Physics)
- 2003 George Gamow Fellowship in undergraduate research (Chemistry)

Research Interests:

Subfactors, von Neumann algebras, planar algebras, tensor and fusion categories, Hochschild and cyclic homology, knot theory

Peer reviewed journal articles:

1. *The embedding theorem for finite depth subfactor planar algebras* (with Vaughan F.R. Jones), *Quantum Topol.* 2 (2011), no. 3, 301337, [arXiv:1007.3173](#), [DOI:10.4171/QT/23](#).
2. *Subfactors of index less than 5, part 4: vines* (with James Tener), *Internat. J. Math.* (2011), [arXiv:1010.3797](#), [DOI:10.1142/S0129167X11007641](#).
3. *Subfactors of index less than 5, part 2: triple points* (with Scott Morrison, Emily Peters, Noah Snyder), *Internat. J. Math.* (2011), [arXiv:1007.2240](#), [DOI:10.1142/S0129167X11007586](#).
4. *A cyclic approach to the annular Temperley-Lieb category*, *J. Knot Theory and its Ramifications* (2011), [arXiv:0912.1320](#), [DOI:10.1142/S0218216511010012](#).

Preprints and computing packages:

1. *A planar calculus for infinite index subfactors*, 2011, [arXiv:1110.3504](#), Submitted.
2. *Infinite index subfactors and the GICAR algebras* (with Vaughan F. R. Jones), 2011, available at <http://math.berkeley.edu/~dpenneys/GICAR.pdf>.
3. *FusionAtlas, a package for Mathematica and Scala* (with Scott Morrison, Emily Peters, Noah Snyder, and James Tener), 2011, available at http://tqft.net/wiki/Atlas_of_subfactors.
4. A book on linear algebra (149 pages), written Summer 2008, available at <http://math.berkeley.edu/~dpenneys/math110/110notes.pdf>.

Selected Invited Talks:

- 10/15/2011 **Purdue University (ECOAS)**: Infinite index subfactors and the GICAR algebras, slides: <http://math.berkeley.edu/~dpenneys/PenneysECOAS2011.pdf>
- 7/18/2011 **Subfactors in Maui**: Infinite index subfactors
- 1/8/2011 **AMS Joint Mathematics Meeting, New Orleans** (von Neumann algebras session): Eliminating weeds and vines to classify subfactors to index 5, slides: <http://math.berkeley.edu/~dpenneys/PenneysJMM2011.pdf>.
- 7/8/2010 **University of Tokyo** and 7/26/2010 **Kyushu University** (operator algebras seminars): Eliminating weeds with annular multiplicities *10
- 5/11/2010 **Vanderbilt University (NCGOA)**: The embedding theorem for finite depth subfactor planar algebras, slides: <http://sitemason.vanderbilt.edu/files/eKWryw/PenneysNCGOA2010.pdf>.
- 2/26/09 **IMSc** (Colloquium): Categories and pictures

Seminars given at UC Berkeley:

I have given over 40 talks at UC Berkeley since 2007. A pdf containing all my talk abstracts since 2007 is available here: <http://math.berkeley.edu/~dpenneys/talkabstracts.pdf>.

Conferences and seminars organized:

I organized two weekly seminars, and three national subfactor conferences:

- Fall 2009 - Present - UC Berkeley Subfactor seminar
- Spring 2008 - Fall 2009 - UC Berkeley Student subfactor seminar
- [Subfactors in Maui 2011](#), [Subfactors in Tahoe 2011](#), [Subfactors in Tahoe 2010](#)

Teaching:

- 2005-2011 UC Berkeley Graduate Student Instructor (instructor and teaching assistant)
- Instructor: calculus (16B), matrix theory and differential equations (54), introduction to proof writing (74), linear algebra (110), complex analysis (185), undergraduate research seminar (191), graduate Prelim workshop
 - Teaching Assistant: calculus (1A, 16A, 16B), multivariable calculus (53), matrix theory and differential equations (54), discrete mathematics (55), linear algebra (110), complex analysis (185), topology and analysis (202B, graduate course)
 - Spring 2011 UC Berkeley program on How Students Learn: <http://gsi.berkeley.edu/howstudentslearn/schedule.html>
 - 2008-9 Outstanding GSI Award (can only receive once)

My course material, including a preprint of a book I wrote when I taught linear algebra Summer 2008, is available online: <http://math.berkeley.edu/~dpenneys/mathematics.html>

References:

Available upon request.