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Colin McSwiggen

education

Ph.D., Applied Mathematics, Brown University, expected 2020.
Dissertation: *Large-Rank Asymptotics of Harish-Chandra Integrals.*
Advisor: Govind Menon.

M.A.+M.Sc., Industrial Design Engineering, RCA/Imperial College London, 2013.

S.B., Physics, MIT, 2011.

S.B., Mathematics, MIT, 2011.
Completed Mathematics Tripos Part II at Cambridge University, UK, 2009-2010.

publications

Accepted papers

R. Coquereaux, C. McSwiggen, J.-B. Zuber (2019). "On Horn's problem and its volume function." To appear in *Comm. Math. Phys.* arXiv:1904.00752

R. Coquereaux, C. McSwiggen, J.-B. Zuber (2019). "Revisiting Horn's problem." *J. Stat. Mech.: Theory Exp* **2019**: 094018. arXiv:1905.09662

C. McSwiggen (2019). "A new proof of Harish-Chandra's integral formula." *Comm. Math. Phys.* **365**: 239–253. arXiv:1712.03995

Submitted papers

C. McSwiggen (2019). "Box splines, tensor product multiplicities and the volume function." Submitted to *Int. Math. Res. Notices.* arXiv:1909.12278

C. McSwiggen (2019). "The Harish-Chandra integral." Submitted to *Enseign. Math.* arXiv:1806.11155

grants, honors, & awards

Chateaubriand Fellowship of the Embassy of France in the United States, 2018-2019.
Host institution: Laboratoire de Physique Théorique et Hautes Énergies, Sorbonne University.
Mentor: Jean-Bernard Zuber.

Graduate Fellowship, Brown University, 2015–2016.

conference and seminar presentations

Upcoming. "Horn's problem, polytope volumes and tensor product decompositions." *Operator Algebras Seminar*, University of Tokyo, January 2020.

Upcoming. "From random matrices to multiplicities and back." *AMS Fall Western Sectional Meeting, Special Session on Random Matrices and Related Structures*, UC Riverside, November 2019.

"Multiplicities from volumes." *Integrability, Combinatorics, and Representations*, Giens, France, September 2019.

"Large-N asymptotics of Harish-Chandra integrals." *Randomness and Symmetry* (poster session), University College Dublin, June 2018.

teaching

Recitation leader

Introduction to Stochastic Differential Equations (APMA 1930U), Brown University, Fall 2019.

Operations Research: Probabilistic Methods (APMA 1200), Brown University, Spring 2017.

Monte-Carlo Simulation with Applications to Finance (APMA 1720), Brown University, Fall 2016.

further training

Program on Dyson-Schwinger equations, topological expansions, and random matrices, Columbia University, 2017.

Graduate Summer School on Random Matrices, Park City Mathematics Institute, 2017.

Summer School in Analysis, University of Chicago, 2017.

Brown-ICERM-Kobe High Performance Computing Summer School, Kobe University, 2015.

service to the profession

Journal refereeing

SIAM Journal of Mathematical Analysis
Annals of Physics
European Journal of Physics

Conference organization

Upcoming. "Random Theory 2020," workshop on probability in computer science and physics, Estes Park, CO, August 2020.

"Random Theory 2017," workshop on probability in computer science and physics, Estes Park, CO, August 2017.