

Idris Assani

Education

- Baccalaureat Serie C, Lycee Behanzin – 16 years old (Ranked first in Benin) 1971.
- MathSup-Math Spe A'(Paris- Lycee Lakanal, Lycee Hoche) –
- Admitted to the ENSI contest 1974 (never tried l'X or Ecole Normale due to incorrect information)
- Admitted to Ecole Centrale de Paris 1976.
- Bachelor of Sciences – University of Dakar 1977.
- DEA Pure Math -University of Dakar 1979.
- Doctorat 3eme cycle, Pure Math, University Paris 6, -adviser (R. Pallu de la Barriere)-Pure Math, 1981
- Bachelor, Commerce, University Paris Dauphine, 1981
- Doctorat es Sciences, Pure Math., University Paris 6, Adviser (A. Brunel) - 1986.

Professional Appointments held

- Maitre Assistant- University Paris Villetaneuse. 1981-1982
- Maitre Assistant – University -Paris 6- 1983
- Professor Ecole Nationale des Arts et Metiers –Paris - 1984-1985
- Post-Doctoral Fellow – University of Toronto – 1986-1988
- Visiting Assistant Professor – UNC- Chapel Hill – July 01 1988- July 01 1989
- Assistant Professor – UNC-Chapel Hill – July 01, 1989 – June 30, 1995
- Associate Professor with tenure- UNC- Chapel Hill, July 01, 1995- June 30, 1996
- Professor UNC-Chapel Hill – July 01, 1996- present.

Main Visiting appointments: Princeton, Berkeley, MSRI, IPAM, UCLA, Rice, North Texas, Luminy, Rennes, Univ. Paris 6, Strasbourg, Univ. of Maryland at College Park, Vancouver, Mac Gill, Warwick, Malaga, Sustech.

Honors and Awards

- Fellow of the American Mathematical Society – inaugural Class 2012
- Member American Mathematical Society selection committee, inaugural class of AMS fellows. 2012.
- Named as one of the 66 most influential mathematicians by the Royal Society since its creation in 1660. (October 15 2017 the Royal Society -celebration of MathWorlds).
- ERDOS Number: 2
- Teaching award: “Favorite Faculty -UNC-CH 1996.
- Finalist, The Benjamin Banneker award, 2006

Synergistic activities

- Organizer of yearly Chapel Hill ergodic theory workshop from 2002 to 2019 – with NSF support (<http://ergwork.web.unc.edu>).
- Consultant expert (STEM) World Bank – ACE program (technical review, site visits, review implementation plans for now 11 existing centers of excellence in Central and West Africa (from 2013- December 2018).
- Promotion of Mathematics in Africa: Codirector (with Marcelo Viana and Stefano Luzzatto) of ICTP-NLAGA School in Dynamical Systems and Ergodic Theory, AIMS-Senegal, June 11, 2014 (M'bour, Senegal).
- Established the collaboration between UNC-Chapel Hill and Kwame Nkrumah University of Science and Technology in Ghana 2008 – 2011 that brought two KNUST undergraduate students into the Dept of Math graduate program. Both graduated with their Masters of Sciences at UNC-CH.
- Gave several one-hour lectures from April to June 2019 at Sustech in Shenzhen, China.
- Served on NSF Graduate Research Fellowship Panel in 2005, 2006, 2007 (Chair) and 2014.
- Served on the Panel Review for Howard University Mathematical Program, 2001
- Served on the Ramanujan Prize committee 2016 and 2017.

Book and Proceedings.

- *Wiener Wintner Ergodic theorems*: 228 pages, World Scientific Pub Co; 2003
- Chapel Hill Ergodic Workshops: American Mathematical Society, Contemporary Mathematics, Vol 356, 2004.
- Ergodic Theory and Related Fields, American Mathematical Society, Contemporary Mathematics Vol. 430, 2007.
- Ergodic Theory, American mathematical Society, Contemporary Mathematics, vol 485, 2009.
- Ergodic Theory and Dynamical Systems, Proc. Of the 2011-2012 UNC-CH ETDS workshops, DeGruyter, 276 pages, 2013.
- Ergodic Theory: Advances in Mathematics, DeGruyter, 2016.

STUDENTS

1) PhD Students

- *Katerina Nicolaou* (PhD) - "Some properties of Wiener Wintner dynamical systems"- May 2001.
- *David Duncan* (PhD) - " A Wiener Wintner double recurrence theorem"- November 2001
- *Ryo Moore* (PhD) – “Extension of J. Bourgain double recurrence theorem”

April 2016.

2) Masters Students

- *Emmanuel Bonuedie*, Minimality of interval exchange transformations- 2011.
- *Carole Agyemanh Prempeh*, - Cutting and Stacking in ergodic theory- 2011.
- *Kim Noonan*, Birkhoff's theorem and the return times for the tail.- 2003.
- *Kim Presser*, "J. Bourgain's return times theorem" – 1995.
- *Leonard Choup* - "Mean Convergence of $(1/N) \sum T^n f$ when S and T Commute, and T, S , with $T S^{-1}$ have Finitely Many Ergodic Components" - May 2001.

3) Undergraduate Honors projects

- *Tom Peng* - "The central limit theorem" -1998 (Highest honors)
- *Elaina Blanks* - "Continuous Nowhere differentiable functions- 2000 (honors).
- *Ben Dodson* - " R. C. Vaughan's proof of the Bombieri-Vinogradov theorem"- 2005 (Highest Honors)
- *Megan Somerday*- "On Littlewood conjecture". April 2006 - Honors
- *Erica Zuhr*. **Henderson Prize**- "On the Besicovich set". April 2007- Honors
- *Chase Debnam*: April 2010- Honors
- *Sean, McMahon* "On a property of A. Brunel's operator" 2016.
- *David Cavender* "Generalizing the Peano Curve". April 2018. Honors.
- *Lyon, Lukas*, On Douglas Hofstadter's 1979 book "Gödel, Escher, Bach: An Eternal Golden Braid". 2018.

Publications:

- Parties décomposables compactes de L^1E . (with [Klei](#), [Heinz-Albrecht](#) (French) [Decomposable compact subsets of L^1E] *C. R. Acad. Sci. Paris Sér. I Math.* **294** (1982), no. 16, 533–536.
- Quelques résultats liés aux ensembles décomposables de L^1E . (French) [Some results concerning decomposable sets of L^1E] *C. R. Acad. Sci. Paris Sér. I Math.* **294** (1982), no. 19, 641–644.
- Une caractérisation des Banach réticulés faiblement séquentiellement complets. (French) [A characterization of weakly sequentially complete Banach lattices] *C. R. Acad. Sci. Paris Sér. I Math.* **298** (1984), no. 18, 445–448.
- Sur la convergence ponctuelle de $T_n f/n^\alpha$, dans L_p . (with [Mesiar](#), [Radko](#))(French) [Pointwise convergence of $T_n f/n^\alpha$ in L_p] *Ann. Sci. Univ. Clermont-Ferrand II Probab. Appl.* No. 3 (1985), 21–29.
- Quelques résultats sur les opérateurs positifs à moyennes bornées dans L_p . (French) [Some results on L_p mean bounded positive operators] *Ann. Sci. Univ. Clermont-Ferrand II Probab. Appl.* No. 3 (1985), 65–72.

- Sur une propriété borélienne des suites relativement faiblement complètes dans un espace de Banach. (French) [A Borel property of weakly complete sequences in a Banach space] *C. R. Acad. Sci. Paris Sér. I Math.* 301 (1985), no. 14, 691–694.
- On the a.e. convergence of $T_n f/a_n$ in L_1 -space.(with Mesiar, Radko) Proceedings of the 13th winter school on abstract analysis (Srńí, 1985). *Rend. Circ. Mat. Palermo (2) Suppl. No. 10* (1985), 57–61 (1986).
- On the punctual and local ergodic theorem for nonpositive power bounded operators in $L_p[0,1]$, $1 < p < +\infty$. *Proc. Amer. Math. Soc.* 96 (1986), no. 2, 306–310.
- Sur les opérateurs à puissances bornées et le théorème ergodique ponctuel dans $L_p[0,1]$, $1 < p < +\infty$. (French) [Operators with bounded powers and the pointwise ergodic theorem in $L_p[0,1]$, $1 < p < +\infty$] *Canad. J. Math.* 38 (1986), no. 4, 937–946.
- Quelques propriétés mesurables de diverses suites d'un espace de Banach séparable E dans $E^{\mathbb{N}}$. (French) [Some measurable properties of various sequences of a separable Banach space E in $E^{\mathbb{N}}$] *Math. Scand.* 58 (1986), no. 2, 301–310.
- On the loss of information in the transition from deterministic systems to probabilistic processes.(with Courbage, M.) *Lett. Math. Phys.* 12 (1986), no. 4, 257–265.
- Sur la convergence ponctuelle de quelques suites d'opérateurs. (French) [On the pointwise convergence of some operator sequences] *Canad. Math. Bull.* 30 (1987), no. 2, 134–141.
- Quelques théorèmes ergodiques dans les espaces $L_p E$. (French) [Some ergodic theorems in $L_p E$ -spaces] *Ann. Inst. H. Poincaré Probab. Statist.* 23 (1987), no. 2, 209–224.
- Estimates of positive linear operators on L_p . *Proc. Amer. Math. Soc.* 104 (1988), no. 1, 193–196.
- Alternating procedures in uniformly smooth Banach spaces. *Proc. Amer. Math. Soc.* 104 (1988), no. 4, 1131–1133.
- Rota's alternating procedure with nonpositive operators. *Adv. Math.* 77 (1989), no. 2, 183–188.
- Minimal-Convergence-on- L_p -spaces, *Ergodic Theory and Dynamical Systems*, 10, 411-421, 1990.
- An equivalent measure for some nonsingular transformations and applications, *Studia Mathematica*, 97, 1-12, 1990 (with J. Wos).
- The helical transform as a connection between ergodic theory and harmonic analysis *Trans of the Amer. Math. Soc.*, vol 331, 1,p.131-142, 1992 (with K. Petersen).
- Some-connections-between-ergodic-theory-and-harmonic-analysis *Proc. of the Int. Conf. in Prob. and Erg. Th. . Evanston, Illinois*, 1991(with K. Petersen and H. White).
- Universal weights from dynamical systems to mean bounded positive operators *Proc. of the Int. Conf. in Prob. and Erg. Th. Evanston, Illinois*, 1991.
- A-Wiener-Wintner-property-for-the-helical-transform" *Erg. Th. and Dyn. Sys.*, 12, 185-194,1992.
- The Wiener-Wintner property for the helical transform of the shift on $[0,1]^{\mathbb{Z}}$, *Erg. Th. and Dyn. Systems* 12, 659-672, 1992.
- The return times and the Wiener Wintner property for Mean bounded positive operators, *Erg. Th. and Dyn. Systems* 12, 1-12, 1992.

- The helical transform and the a.e. convergence of Fourier Series, *Illinois Journal of mathematics*, vol 37, 1, 123-147, 1993.
- Uniform Wiener-Wintner Theorems for weakly mixing dynamical systems (preprint 1993-unpublished-available).
- Wiener Wintner return times ergodic theorem, *Israel J. of Math*, 92, p.375-395, 1995 (with E. Lesigne and D. Rudolph).
- Strong laws for weighted sums of iid random variables, *Duke Math. J.*, vol 88, 217-246, 1997.
- Convergence of the pSeries for Stationary Processes *Proc. of the New York Journal of Math. Conference*, Vol 3A, p. 15-30, 1997.
- A weighted pointwise ergodic theorem *Annales de l'Institut Henri Poincare*, vol 34, n 1, 139-150,1998.
- Multiple recurrence and almost sure convergence of weakly mixing dynamical systems *Israel J. of Math.*, vol 103, 111-125, 1998.
- Corrections to " A Wiener-Wintner property for the helical transform" *Erg. Th. and Dyn. Sys.*,vol 18,1331-1333 (1998).
- A note on the equation $y=(I-T)x$ in L^1 *Illinois J. of Math.* vol 43, 3, (1999) p. 540-541.
- Multiterm return time theorem for weakly mixing systems *Annales de L'Institut Henri Poincare*, vol 36, 2,153-165,(2000).
- Wiener Wintner theorems, *Kluwer Encyclopaedia of Mathematics*, accepted (May 2000).
- Properties of Wiener Wintner dynamical systems(with K. Nicolaou) *Bull. Soc. Math. France*, 129, (3), 2001, p. 361-377.
- Spectral Characterization of Wiener Wintner Dynamical systems, *Compte Rendus de l'Academie des Sciences t. 332*, Serie I, p.321-324, 2001.
- Spectral Characterization of Ergodic Dynamical Systems, *Contemporary Mathematics*, 284, 13-22, 2001.
- Wiener Wintner Dynamical Systems *Erg. Th. and Dyn. Syst*,23, 1637-1654, 2003.
- Spectral Characterization of Wiener Wintner Dynamical Systems *Erg. Th. and Dynamical Systems*, 24, 2, 347-365, 2004.
- Duality and the one sided ergodic Hilbert transform, (preprint 2003) *Contemporary Mathematics 357*, "Chapel Hill Ergodic Workshops", 81-90, 2004.
- Counting and convergence in ergodic theory, (preprint 2004) (with Z. Buczolich and D. Mauldin), *Acta Univ. Carolinae*, 45, 2004, 5-21.
- Pointwise convergence of nonconventional averages, (preprint 2003) *Coll. Math.*, vol 102, 2, 245- 262, 2005.
- An L^1 counting problem in ergodic theory (preprint 2003) (with Z. Buczolich and D. Mauldin), math.DS/0307384, *Journal d'Analyse Mathematique*, vol XCV, 221-241, 2005.
- On A. Zygmund 's differentiation conjecture (preprint 2006). [math.CA/0609827](#)
- Averages along cubes for not necessarily commuting measure preserving transformations, *Contemporary Math.*, vol.430, 1-19, 2007.

- On the one sided Ergodic Hilbert transform (with M. Lin), *Contemporary Mathematics*, vol.430, 20- 39, 2007.
- Some open problems. *Ergodic theory and related fields*, 135–145, *Contemp. Math.*, 430, Amer. Math. Soc., Providence, RI, 2007.
- A maximal inequality for the tail of the bilinear Hardy-Littlewood function (with Zoltan Buczolich), *Contemporary Mathematics*, vol 485, 7-11, 2009
- Some open problems. *Ergodic theory*, 159–162, *Contemp. Math.*, 485, Amer. Math. Soc., Providence, RI, 2009.
- Pointwise convergence of ergodic averages along cubes, *J. Anal. Math.*2010), 241–269.
- The (L_p, L_q) bilinear Hardy Littlewood function for the tail (with Zoltan Buczolich) *Isr. J.Math.*, vol. 179, 173-187, 2010.
- The (L_1, L_1) bilinear Hardy-Littlewood function and Furstenberg averages (with Zoltan Buczolich), *Revista Matemática Iberoamericana* 26.3 (2010), 861-890.
- Pointwise characteristic factors for the multiterm return times theorem.(With Kim Presser) *Ergodic Theory Dynam. Systems* 32 (2012), no. 2, 341–360.
- A survey of the return times theorem. *Ergodic theory and dynamical systems*,(with Kim Presser) 19–58, *De Gruyter Proc. Math.*, De Gruyter, Berlin, 2014.
- Pointwise characteristic factors for Wiener-Wintner double recurrence theorem.(with David Duncan and Ryo Moore) *Ergodic Theory Dynam. Systems* 36 (2016), no. 4, 1037–1066.
- A good universal weight for nonconventional ergodic averages in norm.(with Ryo Moore) *Ergodic Theory Dynam. Systems* 37 (2017), no. 4, 1009–1025.
- Extension of Wiener-Wintner double recurrence theorem to polynomials (with Ryo Moore), *J. Anal. Math.* 134 (2018), no. 2, 597–613.
- Coboundaries of nonconventional ergodic averages, arxiv:1805.07655
- Pointwise double recurrence and nilsequences, arXiv:1504.05732

Main invited Talks

