

László Babai — Curriculum Vitae (compact version)

Links are clickable. *Expanded CV*, last updated in 2013, at <http://people.cs.uchicago.edu/~laci/CV.html>.

Current position: Bruce V. and Diana M. Rauner Distinguished Service Professor (since 2019-07-29), previously George and Elizabeth Yovovich Professor (2010–2019), Departments of Computer Science (1987–current) and Mathematics (1995–current), University of Chicago

Ph.D. in mathematics, Hungarian Acad. Sci., Budapest, 1975. Advisors: Paul Turán, Vera T. Sós.

Previous positions: Eötvös Univ., Budapest, Dept. Algebra: assistant prof. 1975–77, sr. assistant prof. 1977–81, associate professor 1981–87, professor, 1987–1994. Short-term visits at universities and research institutes in the Soviet Union, Canada, the U.S., Germany, the Netherlands, Australia, France, Italy, Switzerland, New Zealand

Current grant: NSF Grant CCF-1718902, \$ 450K (Univ. of Chicago, 9/1/2017-8/31/2020)

Research areas: complexity theory, algorithms, combinatorics, asymptotic group theory, and the many interactions among these fields, including problems of “pure mathematics” motivated by questions in the theory of computing. Detailed list of research areas with links to lists of papers by area and online papers at <http://people.cs.uchicago.edu/~laci/CV.html>.

Honors, prizes (for prizes, hover/click for citations) include *3-times inv. speaker* at the **Internat. Congr. of Mathematicians (ICM):** Kyoto 1990, **Zurich 1994 (plenary)**, Rio de Janeiro 2018. *First European Congr. of Mathematics (ECM), plenary address*, 1992. *Dijkstra Prize in Distributed Computing*, **2016** (test-of-time award, shared); ACM SIGACT Distinguished Service Award, **2016**; *Knuth Prize*, **2015** (lifetime achievement award); *Gödel Prize*, **1993** (shared); Erdős Prize (Hungarian Acad. Sci.) 1983; *American Academy of Arts and Sciences, Fellow*, **2015**; Hungarian Academy of Sciences, member 1994; Honorary doctorate, Technical Univ. Budapest, 1999; *André-Aisenstadt Chair*, CRM, Univ. Montréal, Fall 1996; Erceg Fellowship, Univ. Auckland, New Zealand, Spring 2018

Recent invited lectures and lecture series, mostly in connection with the Graph Isomorphism problem are listed at the end of this document

Publications. More than 190 research papers in combinatorics, algebra, and theoretical computer science. 110 coauthors. Venues include the *Annals of Math.*, *Invent. Math.*, *J. AMS*, *J. Algebra*, *J. ACM*, and conference papers competitively selected by program committees, including 32 papers in STOC and FOCS; most recent: STOC 2019, STOC 2016 (solo paper, shared *Best paper award*), STOC 2013 and FOCS 2013. Several of the FOCS/STOC papers invited by the Program Committees to the special issue of the designated journal for the conference; most recent: FOCS 2013. — Miscellaneous publications include popular articles on the theory of computing and obituaries, memorial articles, and biographies, including extensive studies of the life and work of Paul Erdős.

Advising; mentoring on all levels, from high school to postdoctoral

Advised or co-advised 27 completed PhDs. Informally mentored a number of high school students, a large number of undergraduates, a significant number of PhD students whom I did not formally advise, and several colleagues at a postdoctoral stage of their careers. Five of my **former mentees** became **ICM invited speakers**: Marianna Csörnyei, ICM 2010 analysis (Prof. UChicago, mentored while in high school), János Kollár, ICM 1990 algebraic geometry, ICM 2014 plenary (Prof. Princeton, mentored while undergrad), Éva Tardos, ICM 1990 combinatorics (Prof. Cornell, mentored while undergrad), Gábor Tardos, ICM 2018 combinatorics (Research Prof., Rényi Inst., Budapest, my former PhD student), Ákos Seress, ICM 2006 algebra (Prof. Ohio State U. (deceased), postdoctoral mentee). Former PhD student and postdoctoral mentee Mario Szegedy (Rutgers) became a *twofold recipient of the Gödel Prize*.

Teaching Award and MAA Lectureship. Quantrell Award for Excellence in Undergraduate Teaching, U. Chicago 2005; *M. A. A. Pólya Lecturer*, 1996–98

Committees (past 18 years)

Budapest Semesters in Mathematics, member of the Board (1990–current), Board Chair (2014–17)

NSF Panels

Gödel Prize committee 2003-05 (chair 2005) (ACM SIGACT & EATCS)

Pólya Lectureship committee 2002-05 (chair 2005) (MAA)

Program Committee Chair, 34th ACM STOC (Symp. on Theory of Computing), 2004.

Professional experience. Teaching, research, advising, mentoring at the University of Chicago since 1984 and at Eötvös University, Budapest (1973–1993). Math REU each summer 2001–2017. Directed CS REU in summer 2014. Faculty lead of the U. Chicago/TTIC bid to host the Simons Institute for the Theory of Computing (2010–12) (UChicago was a finalist along with MIT/Harvard and Berkeley).

Experience in creating new institutions and building volunteer networks:

Journals and programs founded

Free online journal *Theory of Computing* <http://theoryofcomputing.org> since 2005.

Designed, co-founded, initially marketed *Budapest Semesters in Mathematics* (program since 1985).

Co-founded journal *Combinatorica* (since 1980; publisher: Bolyai Society and Springer).

Journal donation program to Eastern/Central Europe (1992–1998) (ACM, SIAM)

This item should not be confused with the global *Proceedings Donation Program* (ACM SIGACT) which I did not found but ran and expanded between about 1988 and 1995.

Recent invited lectures not related to the October 2015 result on the *Graph Isomorphism problem* include

Building Bridges II Conf. (Lovász 70), Budapest, July 2, 2018.

Title of talk: “A palace made of gems: The Laci Lovász treasure chest”

“Cohen prize lecture” for undergraduates, “Does God play dice?” Univ. of Chicago, May 30, 2017

Asymptotic Group Theory conf., Rényi Inst., Budapest, Aug. 2015

Knuth Lecture, 47th STOC, June 2015

Algebraic Combinatorics (Godsil 65), U. Waterloo, June 2014

Modern Trends in Algebraic Graph Theory conf. (plenary, Villanova U., 2014)

Algebra, Combinatorics, and More conf (Cameron 65), Queen Mary U. London (opening lecture), July 2013

Erdős Centennial Conference, “Theory of Computig” section, Budapest, June/July 2013

Extremal Combinatorics conf., UIUC, March 2013

Invited lectures and lecture series on Graph Isomorphism, Nov. 2015–current

On Nov. 2, 2015 I announced a series of seminar talks at the University of Chicago about a quasipolynomial-time algorithm for the Graph Isomorphism problem. This announcement went viral and was followed by a flood of invitations for in-depth presentation of the result, as well as to give interviews to science magazines. I declined the interviews because the results had not been peer-reviewed. The paper was posted as arXiv:1512.03547 on Dec. 10, 2015. Links to blogs and science magazines that commented on the announcement also appears on the same arXiv page. The magazines that published articles about the subject include Science News, Nature, Science, MIT Technology Review, New Scientist (UK), Quanta Magazine, Chicago Magazine, Communications of the ACM, La Recherche (Fr.), . . . Here is a list of invited lectures and lecture series I have given on the subject.

University of Chicago “Combinatorics and Theoretical Computer Science seminar” (3 lectures) and

“Group Theory seminar” (1 lecture), Nov 10 – Dec 1, 2015 (total 7.25 hours)

Dagstuhl Seminar on the Graph Isomorphism Problem (Germany), Dec. 13–18, 2015 (3 lectures, total 5 hrs)

Rényi Institute, Budapest, “Algebra Seminar,” “Colloquium,” and “Abért–Szegedy research seminar,”

January 4, 2016 (3 lectures, total 7.5 hours in a single day)

Carnegie Mellon Univ. “Theory and ACO (Algor. & Comb. Opt.) joint seminar,” Jan. 22, 2016 (4 hours)

MIT “Theory of Computation Colloquium,” Feb. 2, 2016 (1.25 hours)

MIT/Harvard/MSR “New England Theory reading group” (“Marathon seminar”), Feb. 3, 2016 (4.5 hours)

Stanford Theory Seminar, Feb. 18–19, 2016, 2 lectures (total 4 hours)

Inst. for Advanced Study, Princeton, “CS/Discrete Math seminar,” Feb. 29–Mar. 1 (2 lect., total 3.5 hours)

Princeton University seminar, Mar. 1 (2 hours)

Univ. of Bristol (UK), “Heilbronn Colloquium” and follow-up discussion, Apr. 11, 2016 (total 2 hours)

Univ. of Cambridge (UK), “DPMMS Colloquium,” Apr. 12–13, 2016 (2 lectures, total 3 hours)

“Heilbronn Quantum Algorithms meeting,” Cambridge (UK), April 14, 2016 (2 hours)

“New York Group Theory seminar,” CUNY Sci. Center, Apr. 29, 2016 (2 hours)

“Simons Collab. on Algorithms and Geometry workshop,” Simons Foundation, NY, May 13, 2016 (2 hours)

“Hot topic lecture” at the SIAM Conf. on Discrete Mathematics, Atlanta, June 8, 2016 (1.5 hours)

48th STOC (Best paper award), June 20, 2016, Cambridge, MA (20 minutes allotted, actual time 30 min.)

EXCILL-3 (“Extremal Combinatorics at Illinois”) internat. conf., Chicago, Aug. 9, 2016 (35min)
“60 Faces to Groups (Lubotzky 60)” conf., 20th Midrasha Mathematicae, *Israel Inst. of Advanced Studies*,
 Jerusalem, Nov. 7, 2016 (2 hours)
Current Developments in Mathematics conf., Harvard U., Nov. 19, 2016 (2 hours)
Georgia Tech, Distinguished Lecture series at *ACO 25th Anniversary conf.* (2 hours), January 9–10,
 2017 (first lecture included the lemma that fixed an error announced a few days earlier)
Tel Aviv Univ. School of Math, Sackler Distinguished Lectures January 18, 2017 (2 hours)
Tel Aviv Univ. Combinatorics seminar, January 22 am, 2017
Hebrew Univ., Jerusalem, *Math. Colloq.*, January 22 pm, 2017
Technion, Haifa, Center for Math. Sci. *Distinguished Lecture Series*, Jan. 23/24/26, 2017
Weizmann Inst. of Sci., Pekeris Memorial Lecture and seminar, Rehovot, Israel, Jan. 29/30, 2017
Yale Univ. Math. Colloq. and seminar, Feb. 15/16, 2017 (2 hours)
Structure vs. Randomness workshop, Simons Inst. for the Theory of Computing, Berkeley, Apr. 10–14, 2017
Scottish Combinatorics meeting, Apr. 25, 2017, Univ. St. Andrews, U.K.
“London Math. Soc. Keynote Lecture” at the British Colloq. for Theoret. Comp. Sci., Apr. 26, seminar
 Apr 27, and lecture for students, Apr. 29, 2017, Univ. St. Andrews, U.K.
“Highlights of Algorithms” conf., Berlin, June 9–11, 2017 (2 hours)
“Groups and Computation (Schupp 80)” conf., Hoboken NJ., June 26–30, 2017
“All kinds of Math... (Cameron 70)” conf., and workshop *“Symmetry in Finite and Infinite Structures,”*
 Lisbon, July 24–27, 2017 (3 lectures, total 4 hours)
“Random Structures and Algorithms” conf., Gniezno, Poland, Aug. 7–11, 2017 (plenary opening lectures,
 2 hours)
MAA Invited Address, Joint Math. Meetings (JMM), San Diego, Jan. 10, 2018
 University of Auckland, New Zealand, March 11–25 (4 lectures):
 Math. Colloquium, Mar. 12; seminars, Mar. 13 and Mar. 21; Public lecture, Mar. 21
“Symposium Discrete Mathematics”, German Math. Assoc., Graz, Austria, June 16, 2018
“Symmetry vs. regularity” conf., Plzen, Czech Rep., July 6–7 (3 lectures)
“Internat. Colloq. on Graph Theory & Combinatorics”, Lyon, France, July 11, 2018 (plenary, 2 lectures)
 ICM satellite meeting *“Combinatorics: extremal, probabilistic and additive,”* Sao Paulo, July 27, 2018
ICM 2018 invited lecture for a joint session of sections “Combinatorics” and “Mathematical aspects of
 computer science,” Rio de Janeiro, August 3, 2018
“Groups, Geometry and Representations (Segal 70, Shalev 60)” conf., Oxford, U.K., September 4, 2018
“Symmetry breaking,” BIRS CMO Oaxaca, Mexico, Sep. 18, 2018 (3 lectures)
“Triangle Lectures in Combinatorics,” Chapel Hill NC, Nov. 10, 2018 (2 lectures)
“50th South-Eastern Internat. Conf. on Combinatorics, Graph Theory, and Computing”, Boca Raton FL,
 March 5, 2019

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