

Illya V. Hicks

Computational and Applied Mathematics
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PERSONAL DATA

- Born in Waco, TX.
- Married: wife Casmin, one child

EDUCATION

Degree	Field	Institution	Date
Ph.D	Computational and Applied Mathematics	Rice University	2000
M.A.	Computational and Applied Mathematics	Rice University	2000
B.S.	Mathematics	Southwest Texas State University	1995

RESEARCH AREA

- branch decomposition techniques
- combinatorial optimization
- graph theory
- integer programming
- network design
- cancer treatment
- social networks
- logistics

EXPERIENCE

- **Rice University**, Associate Professor of Computational and Applied Mathematics (Spring 2007-Present)

- **Texas A&M University**, Associate Professor of Industrial and Systems Engineering (Fall 2006)
- **Texas A&M University**, Assistant Professor of Industrial and Systems Engineering (Fall 2000-Spring 2006)
- **University of Houston-Main Campus**, Instructor (Fall 1999 - Spring 2000)
Instructed undergraduate students in college algebra (Fall 1999) and pre-calculus (Spring 2000).
- **Rice University**, AGE Program (Summers 1999, 1998, 1995)
Conducted ongoing research relevant to thesis while mentoring undergraduates and high school students.
- **Bell Labs (Lucent Technologies)**, Summer Intern (Summer 1997)
Implemented traveling salesman problem solver using the Held-Karp algorithm.
- **AT&T Labs**, Summer Intern (Summer 1996)
Worked on a min-cost network flow solver.

HONORS

- 2005 Optimization Prize for Young Researchers, Optimization Society, INFORMS
- AT&T Labs Graduate Fellowship (formerly known as CRFP fellowship)

PUBLICATIONS

Published and Accepted Journal Articles (* denotes graduate student)

1. Hicks, I. V., “**New Facets for the Planar Subgraph Polytope**”, Networks, to appear (partially supported by DMI-0217265 and DMI-0521209)
2. Hicks, I. V., N. McMurray, “**The Branchwidth of Graphs and their Cycle Matroids**”, Journal of Combinatorial Theory Series B 97(5), 2007, 681-692 (partially supported by DMI-0217265 and DMI-0521209)
3. Arámbula*, I., I. V. Hicks, “**Restricted b -factors in Bipartite Graphs and t -designs**”, Journal of Combinatorial Designs 14(3), 2006, 169-182 (partially supported by DMI-0217265)

4. Hicks, I.V., "**Planar Branch Decompositions I: The Ratcatcher**", *INFORMS Journal on Computing* 17(4), 2005, 402-412 (partially supported by DMI-0217265)
5. Hicks, I. V., "**Planar Branch Decompositions II: The Cycle Method**", *INFORMS Journal on Computing* 17(4), 2005, 413-421 (partially supported by DMI-0217265)
6. Kahruman, S., E. Kolotoğlu*, S. Butenko, I. V. Hicks, "**On Greedy Construction Heuristics for MAX CUT problem**", to appear in *International Journal on Computational Science and Engineering* (partially supported by DMI-0217265)
7. Hicks, I. V., "**Graphs, Branchwidth, and Tangles! Oh My!**", *Networks* 45(2), 2005, 55-60 (partially supported by DMI-0217265)
8. Warriar, D., W. Wilhelm, J. Warren*, I. V. Hicks, "**A Branch-and-Price Approach for the Maximum Weight Independent Set Problem**", *Networks* 46 (14), 2005, 198-209 (partially supported by DMI-0217265)
9. Hicks, I. V., "**Branch Decompositions and Minor Containment**", *Networks* 43(1), 2004, 1-9
10. Butler-Purry, K. L., N. D. R. Sarma, I. V. Hicks, "**Service Restoration in Shipboard Electric Power Systems**" *IEE Proceedings-Generation, Transmission and Distribution* (an international EE journal) 15(1), 2004, 95-102
11. Garcia-Diaz, A., M. A. Bonyet, I. V. Hicks, "**Optimization Procedures for simultaneous Road Rehabilitation and Bridge Replacement Decisions in Highway Networks**", *Engineering Optimization* 34(5), 2002, 445-459
12. Hicks, I. V., "**Branchwidth Heuristics**", *Congressus Numerantium* 159, 2002, 31-50

Book Chapters (* denotes graduate student)

1. Hicks, I. V., E. Kolotoğlu*, A. M. C. A. Koster, "**Branch and Tree Decomposition Techniques for Discrete Optimization**", *Tutorials in Operations Research: Emerging Theory, Methods, and Applications*, J. Cole Smith (ed), INFORMS, Hanover, MD, 2005

RESEARCH GRANTS

1. **“A New Decomposition Approach for a Class of NP-hard Graph Problems”**, PIs: W. Wilhelm and I. V. Hicks, NSF (DMI-0217265), \$175K, 9-1-02 to 8-31-05, REU grant (24K)
2. **“SGER: Branch Decomposition Techniques for Independence Systems”**, PI: I. V. Hicks, NSF (DMI-0521209), \$80K, 8-1-05 to 7-31-06, developed from 2005 CAREER proposal (only one CAREER award given in OR program for 2005)
3. **“Innovative Techniques for Constructing Branch Decompositions”**, PI: I. V. Hicks, NSF (DMS-0729251, formerly DMS-0611723). \$95K, 8-15-06 to 8-14-09

OTHER GRANTS

1. **“Travel Support for Minority Students to attend INFORMS Annual Meeting; October 24-27, 2004; Denver, CO”**, PI: I. V. Hicks, NSF (DMI-0440785), \$4.75K, 9-1-04 to 8-31-05
2. **“Pathways to the Doctorate Research Assistantship Award”**, PI: I.V. Hicks, Texas A&M University, \$25K, 9-1-05 to 8-31-07
3. **“Travel Support for Minority Students to attend INFORMS Annual Meeting; November 13-16, 2005; New Orleans, LA”**, PI: I. V. Hicks, NSF (DMI-0537840), \$5K, 9-1-05 to 8-31-06
4. **“GAAN: Fellowships for Research in Industrial and Systems Engineering,”** PIs: G.-A. Klutke, S. Cetinkaya, and I. V. Hicks, DoEd, \$380K, 9-1-06 to 8-31-09
5. **“BPC-DP: Academic Mentoring Workshops for Underrepresented Participants”**, PIs: V. Taylor, I. V. Hicks, and B. York, NSF (CNS-0634272), 388K, 3-1-07 to 2-28-10
6. **“Travel Support for Minority Students Attending INFORMS Annual Meetings”**, PI: I. V. Hicks, NSF (CMMI-0739996), \$18.9K, 8-1-07 to 7-31-10

SELECTED TECHNICAL PRESENTATIONS

1. **“Degree Based Generalizations of Cliques and Stable Sets”**, Industrial and Systems Engineering Departmental Seminar, University of Florida, September 2007 (invited)
2. **“Branch Decomposition Techniques for Discrete Optimization”**, Blackwell-Tapia Conference, IMA, University of Minnesota, November 2006 (invited)

3. **“Branchwidth via Integer Programming”**, Mixed-Integer Programming Workshop, University of Miami, June 2006 (invited)
4. **“3-Separations and the Stable Set Polytope”**, INFORMS Annual Meeting, San Francisco, CA, November 2005
5. **“Tutorials: Branch and Tree Decomposition Techniques for Discrete Optimization”**, INFORMS Annual Meeting, San Francisco, CA, November 2005 (with A. M. C. A. Koster) (invited)
6. **“The Branchwidth of Graphs and Cycle Matroids”**, Mathematics Department, Texas A&M University, September 2004, (invited)
7. **“Branchwidth, Parallel Graph Algorithms, and Social Networks”**, Sandia National Labs, Livermore, CA, June 2004 (invited)
8. **“Operations Research Techniques for Radiation Therapy”**, University of Texas Health Science Center at San Antonio Medical School, San Antonio, TX, May 2004 (invited)
9. **“Theoretical and Practical Applications of Branch Decompositions”**, CombinaTexas Conference, College Station, TX, April 2004 (invited plenary speaker)
10. **“Graphs, Branchwidth and Tangles! Oh My!!”**, Conference for African-American Researchers in the Mathematical Sciences (CAARMS), Duke University, Durham, NC, June 2001 (invited)
11. **“Graph Minors and Branch Decompositions”**, NAM Granville-Brown Session, Joint Mathematics Meeting, New Orleans, LA, January 2001 (invited)
12. **“Got Minor?”**, Blackwell-Tapia Distinguished Lecture Series Conference, Cornell University, May 2000 (invited)

GRADUATE STUDENTS

- Doctoral
 - Ivette Arambula, “A New Polyhedral Approach to Combinatorial Designs”, Texas A&M University, May 2004, PROS Revenue Management, Associate Scientist
 - Adewale Faparusi, Texas A&M University
 - Elif Kolotoglu, “Integer Programming Techniques for the Branchwidth Problem”, Texas A&M University, May 2008 (expected)
 - Benjamin McClosky, “Independence Systems and Stable Set Relaxations”, Rice University, May 2008 (expected)

- Jeff Warren, “Independent Set Problems and Odd-Hole-Preserving Graph Reductions”, Texas A&M University, defended Fall 2006, American Airlines
- Masters (at Texas A&M University)
 - Anto Navin Amalraj, M.Eng., Dec 2003
 - Jegganathan Balu, M.S. non-thesis, May 2004
 - Sankar Raj Devarpiran, M.Eng., May 2003
 - Kapil Kedia , M.Eng., May 2003
 - Seung-Kee Park, M.Eng., May 2003
 - Ali Pilatin, M.Eng., May 2003
 - Stuart Rinkleff, M.Eng., May 2006

PROFESSIONAL ACTIVITIES

- Co-chair, Doctoral Consortium, Richard Tapia Celebration of Diversity in Computing 2007
- Cluster leader, Rice-Houston AGEP, Rice University, Spring 2007-Present
- President, Black Faculty Alliance, Texas A&M University, Fall 2006
- President, Minority Issues Forum of INFORMS, Fall 2003-Fall 2006
- Special Events and Spouse’s Chair, INFORMS Annual Meeting 2005
- Co-organizer, Professional Development Evening, SIAM Annual Meeting, 2002, 2004
- Member, Diversity Committee, SIAM Summer 2005 – present
- Member, Diversity Committee, INFORMS Summer 2006 – December 2006
- Panelist, “Lessons Learned from Recently Tenured Faculty”, Academician Colloquium, INFORMS Annual Meeting 2007
- Panelist, “Advising Graduate Students”, Academician Colloquium, INFORMS Annual Meeting 2004
- Participant, MSRI Introductory Workshop on Discrete and Computational Geometry, Berkeley CA, August 2003 (invited)
- Participant, NCI/NSF Workshop on Operations Research and Radiation Therapy, Washington D.C., February 2002 (invited)
- Referee:
 1. ACM-SIAM Symposium on Discrete Algorithms
 2. ACM Transaction on Algorithms
 3. Algorithmica
 4. Annals of Operations Research
 5. European Journal of Operational Research

6. IEEE Transaction on Automation Science and Engineering
 7. INFORMS Journal on Computing
 8. International Colloquium on Automata, Languages and Programming
 9. Networks
 10. Operations Research Letters
 11. SIAM Journal on Discrete Mathematics
 12. WG 2006 - Workshop on Graph-Theoretic Concepts in Computer Science
- NSF panelist:
 1. OR (2001, 2007)
 2. computational mathematics (2003)
 3. IGERT (2005)

PROFESSIONAL AFFILIATION

- Institute for Operations Research and the Management Science (INFORMS)
- Mathematical Programming Society
- National Association of Mathematicians (NAM)
- Society for Industrial and Applied Mathematics (SIAM)
- Society for the Advancement of Chicanos and Native Americans in Science (SACNAS)

GRADUATE ADVISOR

- William J. Cook