Some Episodes in MSCS history

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Why MSCS?

Department of Mathematics, Statistics, and Computer Science

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Department of Mathematics, Statistics, and Computer Science

Why not 'and Applied Mathematics and Mathematics Education and ...'

serious question 1982

Will computer science be an LAS or Engineering Program?

Rankings

2016 U.S. News and World Report

34 th overall

Logic 6th

NRC

1982 - low 30's

1993 32nd

2010: S-rank 31

Logic

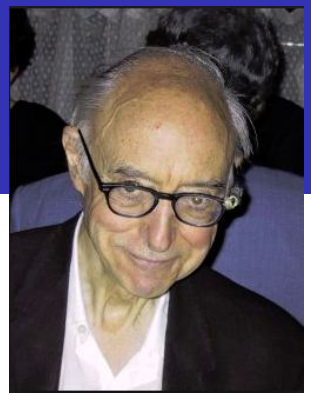
tenured faculty - never more than 4 at a time
60's
William Howard – proof theory
Robert Soare – recursion theory
Louis Hay – recursion theory
Verena Dyson – model theory and algebra (left 73 for Calgary)
70's John Baldwin model theory
Doug Miller model theory (left 81 for Schlumberger)

Logic

80's Dave Marker Model theory
Wolfgang Maas recursion theory /computer science
Martin Grohe (2000-2001) finite model theory/ computer science
2100's
Mathias Aschenbrenner (2003- left for UCLA 2008) MT
Christian Rosendal set theory
Isaac Goldbring Model theory
Dima Sinapova Set Theory

Universal algebra and lattice theory
Phil Dwinger, Joel Berman, Wim Blok

William A. Howard



The Curry-Howard Isomorphism

The formulae-as-types notion of construction

W. A. Howard In Philippe De Groote (ed.), 1995

1538 cites for this paper in google scholar about twice any other single paper by any UIC person I checked.

The Bachmann-Howard ordinal

Strengths through the years

finite group theory and projective planes
applied mathematics
algebraic topology
logic
geometry
statistics
low dimensional manifolds
algebraic geometry
number theory

Women at UIC

5 women at Navy Pier had come from Chicago Public schools after the war. Helen Sears, Rose Kepka, several others

Research faculty: early years
Verena Dyson: algebra/logic

Flora Dinkenes (ph.d. in Group theory from Kaplansky 1951)

Alice Hart (Mathematics Education)

Doris Schattschneider, (expert on Escher) Evelyn Frank (special functions) , and Mary Weiss: classical analysis (died at age 35 in 1966 soon after coming to UIC)

Louise Hay

recursion theory and theoretical computer science
Head of Department 1980-89
founding member AWM
ASL secretary 1977-82

75-90

Vera Pless coding theory (1975 retired 2005)

Susan Friedlander (1975 retired 2008, now at USC) applied mathematics

Karen Uhlenbeck (1976-83 left for U of C, then for UT Austin) partial differential equations

Winnie Li (78-79: moved to Penn State)

Bhama Srinivasan (1980 retired 2009) group theory (AWM president 81-83)

Janet Beissinger -(1981 Research Associate professor (LSRI) combinatorics/math ed

The new millenium

1. Julee Kim (hired 2001, arrived 2002, left for MIT 2007)
2. Brooke Shipley (hired 2003, as Assoc. Prof.) topology Sloan
3. Alina Cojocaru (hired 2006) number theory NSF CAREER Award
4. Alison Superfine (hired 2006) math ed
5. Laura DeMarco (hired 2007 left for Northwestern 2015) dynamical systems/complex analysis
6. Alison Castro Superfine (2007) (Math Ed)
7. Alina Marian (hired 2007, arrived 2008, left for Northeastern 2011) algebraic geometry
8. Irina Nenciu (hired 2008) Integrable systems, random matrices and mathematical physics NSF CAREER Award
9. Mara Martinez (hired 2008) mathematics education
10. Jing Wang (hired 2008) statistics
11. Dima Sinapova (hired 2012) set theory NSF CAREER

Mathematics Education

Remarkable for the long term integration of research mathematicians with the preparation of teachers and professional development.
early: Bud Feinstein, Alice Hart, Ed Murphy, David Page

The 80's breakthrough: Phil Wagreich, Steve Jordan, Dave Foulser, Izzie Weinzweig, Bill Howard, Joram Sagher, John Baldwin, John Wood

Contributors: Dave Radford, Rich Larson, Herb Alexander, Anatoly Libgober, courses taught to teachers in high schools **Clinical** Messersmith, Slaughter, Dees (Ph.D,) , Masley (Ph.D,), Miltner, Anderson,Saunders (Ph.D,) , Beissinger (Ph.D,)

21st century
Allison Castro Superfine, Mara Martinez

Mathematics Education

Major features

1. Unique 'concentrators' program for undergraduate education majors certifies roughly 1/4 of elementary teaching grad with math specialization.
2. Major outreach programs for professional development
3. part of the Chicago Algebra Initiative: preparing 8th grade teachers to teach algebra.
4. Doctor of Arts Program

Classification of the finite simple groups

Monstrous Moonshine (Wikipedia)

In 1978, John McKay found that the first few terms in the Fourier expansion $j(t)$:
$j(\tau) = \frac{1}{q} + 744 + 196884q + 21493760q^2 + 864299970q^3 + 20245856256q^4 + \cdots$
with $q = e^{2\pi i\tau}$ and t as the half-period ratio could be expressed in terms of linear combinations of the dimensions of the irreducible representations of the monster group M.
Based on their computations, Conway and Norton conjectured the existence of an infinite dimensional graded representation of M, reflecting this corresponce.

In 1980, A. Oliver L. Atkin, Paul Fong and Stephen D. Smith, of UIC showed that such a graded representation exists, using computer calculation to decompose coefficients of j into representations of M up to a bound discovered by Thompson.

Classification of the finite simple groups

1. McBride (Ph.D. under Fong) proves the signalizer functor theorem for all finite groups.
2. Jeffrey Leon with Sims constructed the 'baby monster'.
3. quasithin groups
    1. 1981 Mason (Ph.D. under Fong) partial results (800 pages)
    2. 2004 Aschbacher and Smith publish their work on quasithin groups filling the last gap in the classification known at that time. (1221 pages)