Logic in Vienna

Logic in Vienna: History

- 1920's: Wiener Kreis
  M. Schlick, H. Hahn, H. Menger, O. Neurath, R. Carnap, ...

  Logical Positivism (in contrast to K. Popper's *Falsification*)
- Influential: L. Wittgenstein
- Eminent: K. Gödel

Logic in Vienna: History (cont'd)

After World War II

- 1967: Institut für Logistik (K. Christian)
- 1980's:
  - Emergence of CSL in Vienna
  - Kurt Gödel Society (1987) `http://kgs.logic.at/`
  - Institute Vienna Circle (1991)
- 1990's, 2000+: growth
- Today: CSL @ Uni Vienna, TU Vienna, ISTA

Kurt Gödel Society

`http://kgs.logic.at`

- Founded in 1987
- An international organization for the promotion of research in the areas of Logic, Philosophy, History of Mathematics
- Above all in connection with the biography of Kurt Gödel
- President: P. Hajek, Vice-President: M. Baaz
- Activities:
  - Collegium Logicum
  - Conferences
    e.g. *Horizons of Truth: Gödel Centenary 2006*
  - Publications (Annals of the Kurt Gödel Society)
  - Grants
    e.g. Kurt Gödel Centenary Research Prize Fellowship
    ($1.400.000, Templeton Foundation)

CSL@ Uni Vienna

Kurt Gödel Research Center for Mathematical Logic (former Institute for Logic)
`http://www.logic.univie.ac.at/`

S. Friedman, J. Kellner et al.

- Axiomatic set theory
- Infinite-time Turing machines
- Embedding complexity
- Computable model theory

Institute of Science and Technology Austria (ISTA)

www.ist.ac.at/

T. Henzinger (2008), K. Chatterjee (06/2009)

- Model Checking
- Logic and automata
- Verification
- Games
- Formal methods in systems

TU-Vienna

`http://www.tuwien.ac.at/`

Facts:

- Established 1815
- Currently, about 150 full professors and 1800 scientific staff, plus 600 teaching assistants, 24,000 students
- 8 faculties, including *Faculty of Informatics*
- Faculty of Informatics has 7 institutes (currently about 20 full profs, 35 associate profs); since 2009/10 a *PhD School*
- Affinity to Computational Logic: about 15 profs

CSL @ TU Vienna

- A strong group in *Computational Logic*
- One of the two priority topics of the Faculty of Informatics
- Institutes
  - Discrete Mathematics & Geometry (Math)
  - Computer Languages (CS)
  - Information Systems (CS)

Projects

International Projects

- EU Projects (FPx)
  - Networks of Excellence (CologNet, REWERSE, GAMES, MONET,...)
  - Integrated Projects, Streps
  - **Erasmus Mundus: Master in Computational Logic**
  - Marie Curie, IRSES
- Bilateral Projects (DACH, ...)
- ÖAAD/Amadeus Projects (exchange)

National Projects

- FWF
- FFG (FIT-IT, ...)
- Vienna Technology Funds (WWTF)
- ÖAW (Doc)

Currently, about 25-30 projects running

Institute of Discrete Mathematics and Geometry

M. Baaz (research unit *Computational Logic*)

`http://www.dmg.tuwien.ac.at/`

- Proof theory
- Many-valued logics
- Temporal logics
- Mathematical logic

M. Goldstern (research unit *Algebra*)

`http://info.tuwien.ac.at/goldstern/`—

- Mathematical logic
- Universal algebra
- Applications of logic (set theory)

Institute of Computer Languages

Theory and Logic Group

`http://www.logic.at/`

A. Ciabattoni, C. Fermüller, B. Gramlich, A. Leitsch, G. Salzer

- Mathematical Logic
- Computational proof theory
- Resolution- and tableaux-based theorem proving
- Non-classical logics
- Equational reasoning and term rewriting
- Formal methods for specification and verification

Institute of Computer Languages (cont'd)

Compilers and Languages Group

`http://www.complang.tuwien.at/`

J. Knoop, L. Kovacs

- Program analysis and optimization
- Abstract interpretation and model-checking

Institute of Information Systems

Databases and Artificial Intelligence Group (DBAI)
`http://www.dbai.tuwien.ac.at/`

G. Gottlob, R. Pichler, S. Woltran

- Foundations of databases
- Semistructured data
- Advanced database systems
- Computational logic and complexity

Institute of Information Systems (cont'd)

Formal Methods in Systems Engineering

`http://www.forsyte.tuwien.ac.at/home/index.php?id=home&arg=`

H. Veith , M. Samer

- Formal Methods for Embedded Systems
- Model Checking and Constraint Solving
- Automata, Logic, and Complexity

Institute of Information Systems (cont'd)

Knowledge Based Systems Group (KBS)

`http://www.kr.tuwien.ac.at/`

U. Egly, T. Eiter, M. Fink, S. Szeider, H. Tompits

- Knowledge representation and reasoning
- Computational logic and complexity
- Declarative problem solving
- Intelligent agents
- Mobile robots
- Knowledge-based systems in engineering

Institute of Information Systems (cont'd)

Discrete Reasoning Methods

`http://www.kr.tuwien.ac.at/drm/szeider/`

S. Szeider

- Computational Complexity
- Computational Reasoning
- Improving Solutions for Intractable Problems

EMCL modules at TUW

- Computational Logic for Information Technology
  EMCL-A-CLIT (Reinhard Pichler)
- Computer Science Engineering EMCL-A-CSE (Helmut Veith)
- Knowledge Representation EMCL-A-KR (Thomas Eiter)
- Logical Foundations EMCL-A-LF (Alexander Leitsch)
- Modeling and Verification EMCL-A-MV (Helmut Veith)
- Principles of Computation EMCL-A-PC (Thomas Eiter)
- Principles of Inference EMCL-A-PI (Alexander Leitsch)

for details and courses see:

`http://www.logic.at/compulog/`