

CONFERENCE INFORMATION

Registration

The registration desk is situated at the entrance to the Alan Turing Building (ATB) and will be open from 14.00 to 21.00 on Wednesday 11th, from 8.30 to 19.00 on Thursday 12th, Friday 13th, Monday 16th, Tuesday 17th and from 8.30 to 17.00 on Wednesday 18th July. On Saturday the registration desk will be open from 8.30 to 18.00 in the foyer of the Chemistry Building.

Venues

The Turing, Goodstein and plenary lectures, and the tutorials, will take place in Lecture Theatre G.51 in the Chemistry Building (building 61 on the campus map).

Special sessions and contributed talks will take place in parallel sessions in the lecture rooms on the Ground Floor of the Alan Turing Building.

Computers

WiFi is available across most of the Campus for Conference participants using the password which is included in your conference pack. Participants may also use the Computer Cluster in room G105 but please note that *the ATB closes at 19.30*. The Conference web site is at <http://www.mims.manchester.ac.uk/events/workshops/LC2012/index.php>

Programme Committee:

Uri Abraham (*Ben Gurion University of the Negev*)
Lev Beklemishev (*Steklov Mathematical Institute*)
Barry Cooper (*University of Leeds*)
Paola D'Aquino (Chair) (*Secunda Università di Napoli*)
Anui Dawar (*University of Cambridge*)
Göran Sundholm (*Universitiet Leiden*)
Marcus Tressl (*University of Manchester*)
Frank Wolter (*University of Liverpool*)

Special Session Organizers:

Uri Abraham *Set Theory*
Steve Awodey *Homotopy Type Theory*
Lev Beklemishev *Proof Theory*
Barry Cooper *Computability, Logical and Physical*
Marcus Tressl *Model Theory*

Ray Turner *Philosophy of Mathematics and Computer Science*

Local Organizing Committee:

Sasha Borovik, Mark Kambites, Jeff Paris, Mike Prest, Harold Simmons,
Marcus Tressl, Alena Vencovská, Alex Wilkie (Chair), George Wilmers

Sponsors

Association for Symbolic Logic, London Mathematical Society, British Logic Colloquium, Manchester Institute for Mathematical Sciences, University of Manchester.

TIMETABLE OF LECTURES

All Tutorials and Plenary Lectures are in Chemistry G.51

Special Session abbreviations and locations:

CLP: Computability, Logical and Physical, ATB room G.107

HTT: Homotopy Type Theory, ATB room G.107

MT: Model Theory, ATB room G.205

PMCS: Philosophy of Mathematics and Computer Science, ATB room
G.107

PT: Proof Theory, ATB room G.205

ST: Set Theory, ATB room G.205

Thursday 12th July

Tutorial

10.00-11.00 Farah, *Set Theory 1*

Plenary Lecture

11.30-12.30 Longo, *Schroedinger (1944) and Turing (1952) on the Logic of Life: from the “coding” to the “genesis” of organization and forms.*

Special Sessions

CLP

14.00-14.45 Ambos-Spies, *On the strongly bounded Turing degrees of simple sets*

14.45-15.30 Danos, *TBA*

PT

14.00-14.45 Visser, *Provability logic and the arithmetics of a theory*

14.45-15.30 Wainer, *A hierarchy of ramified theories “around” PRA*

CLP

16.00-16.45 Dowker, *Modus Ponens in physics*

16.45-17.30 Welch, *Σ_0^3 -determinacy and transfinite Turing machine models*

ST

16.00-16.45 Dzamonja, *Forcing axioms*

16.45-17.30 Asperó, *Ω -completeness and forcing axioms*

Contributed Talks

- ATB G.107
 17.30-17.50 Akiyoshi, *An extension of the $\Omega_{\mu+1}$ -Rule*
 17.50-18.10 Arai, *Proof theoretic bounds of set theories*
 18.10-18.30 Goudsmit, *On the admissible rules of Gabbay–de Jongh logics*
- ATB G.209
 17.30-17.50 Kudaibergenov, *Generalizations of o-minimality to partial orders*
 17.50-18.10 Wencel, *Definable connectedness in the weakly o-minimal context*
 18.10-18.30 Eberhard, *Applicative theories for logarithmical complexity classes*
- ATB G.205
 17.30-17.50 Shenefelt, *Why did Symbolic Logic Emerge During the Industrial Revolution*
 17.50-18.10 Nenchev, *Dynamic relational mereotopology: First-order and modal logics for stable and unstable relations*
- ATB G.108
 17.30-17.50 Rute, *Martingale convergence and algorithmic randomness*
 17.50-18.10 Boričić, *Hypothetical syllogism rule probabilized*
 18.10-18.30 Norman, *Hot buttered conditionals, tangled up in grue: Goodman’s riddles solved by parametric probability analysis*
- ATB G.207
 17.30-17.50 McKenzie, *Automorphisms of models of set theory and NFU*
 17.50-18.10 Swan, *The failure of the existence property for CZF*

Friday 13th July, Afternoon

Special Sessions

HTT G.107

14.00-14.45 Aczel, *The Structure Identity Principle and the Univalence Axiom*

14.45-15.30 Gambino, *Homotopy-initial W-types*

ST G.205

14.00-14.45 Dzamonja, *Forcing axioms*

14.45-15.30 Cummings, *Infinitary methods in finite combinatorics*

HTT G.107

16.00-16.45 Hyland, *Identity and existence*

16.45-17.30 Lumsdaine, *A categorical road to intensional type theory*

PT G.205

16.00-16.45 Beckmann, *Feasible computation on general sets*

16.45-17.30 Strahm, *Unfolding schematic formal systems: From non-finitist to feasible arithmetic*

ST G.207

16.00-16.45 Cummings (for Raghavan) *Bounding, splitting, and almost disjointness*

Contributed Talks

- ATB G.107
 17.30-17.50 Pelupessy, *Adjacent Ramsey and unprovability*
 17.50-18.10 Van der Meeren, *Well partial orderings and recursively defined trees*
- ATB G.205
 17.30-17.50 Engström, *Generalized quantifiers in dependence logic*
 17.50-18.10 Yang, *Implications in dependence and independence logic*
 18.10-18.30 Yanchev, *Part restrictions in Description Logics: reasoning in polynomial time complexity*
- ATB G.207
 17.30-17.50 Baissalov, *On linearly minimal Lie and Jordan algebras*
 17.50-18.10 Brouette, *A nullstellensatz and a positivstellensatz for ordered differential fields*
 18.10-18.30 Hoffman, *Multiplicatively iterative higher derivations*
- ATB G.209
 17.30-17.50 Nemoto, *The proof theoretic strengths of determinacy between Σ_1^0 and Δ_2^0*
 17.50-18.10 Sato, *Proof-theoretic Strength Results of Analogues of Small Large Cardinal Hypotheses in Second Order Systems*
 18.10-18.30 Kirby, *Ordinal exponentiations of sets*
- ATB G.108
 17.30-17.50 Kapulkin, *Fibration categories and type theory*
 17.50-18.10 Ferguson, *Ramsey's footnote and Priest's connexive logics*
 18.10-18.30 Blasio, *Logics for discussion, and for agreement*

18.30 Reception – Atrium Bridge, 1st Floor

Saturday 14th July

Tutorial

9.00-10.00 Farah, *Set Theory 3*

Plenary Lecture

10.00-11.30 Shavrukov, *Non-standard elements of r.e. sets*

Turing Lecture

11.30-12.30 Macintyre, *TBA*

Goodstein Lecture

14.00-15.00 Rathjen, *From Goodstein sequences to graph theory and weak consistency*

Plenary Lecture

15.30-16.30 Avigad, *Computability and convergence*

Contributed Talks

Chemistry G.51

16.30-16.50 Miller, *Probabilistic generalizations of deducibility*

16.50-17.10 Sanders, *Reuniting the antipodes: Bringing together Constructive and Nonstandard Analysis*

17.10-17.30 Setzer, *How to reason coinductively informally*

Monday 16th July

Tutorial

9.00-10.00 Zilber, *Model Theory 1*

Plenary Lectures

10.30-11.30 Shlapentokh, *First-Order and Existential Definability and Decidability in Positive Characteristic*

11.30-12.30 Soskova, *The Turing universe in the context of enumeration reducibility*

Tutorial

14.00-15.00 Montalbán, *Computability 1*

Special Sessions

PMCS

15.30-16.15 Van Benthem, *Computation as Social Agency: What and How?*

16.15-17.00 Abramsky, *TBA*

MT

15.30-16.15 Baro, *From commutators to Cartan subgroups in the o-minimal setting*

16.15-17.00 Ould Houcine, *Algebraic closure and ampleness in free groups*

Contributed Talks

ATB G.107

17.00-17.20 Iosti, *Imaginaries in Tannakian categories*

17.20-17.40 Lee, *Sight realizability: the arithmetic in subtoposes of the effective topos*

ATB G.205

17.00-17.20 Tinchev, *Modal approach to region-based theories of space: canonicity*

17.20-17.40 Hampson, *The modal logic of 'elsewhere' as a component in product logics*

17.40-18.00 Surowik, *Knowledge and intuitionistic tense logic*

ATB G.207

17.00-17.20 Sariev, *The ω -Turing degrees*

17.20-17.40 Badaev, *A note on computable Friedberg numberings in the Ershov hierarchy*

17.40-18.00 San Mauro, *Aspects of the theory of computable enumerable equivalence relations*

ATB G.209

17.00-17.20 L'Innocente, *Diophantine Sets of Representations*

17.20-17.40 Terzo, *On Shapiro's conjecture*

17.40-18.00 Saveliev, *On Zariski topologies on Abelian groups with operations*

ATB G.108

17.00-17.20 Quinon, *Numerals and numbers. Problems of encodings and denotations*

17.20-17.40 Pedferri, *Is it original only once?*

Tuesday 17th July

Tutorial

9.00-10.00 Zilber, *Model Theory 2*

Plenary Lectures

10.30-11.30 Sela, *The elementary theory of free products of groups*

11.30-12.30 Levin, *Computers: who are they and what is beyond them*

Tutorial

14.00-15.00 Montalbán, *Computability 2*

Special Sessions

PMCS

15.30-16.15 Horsten, *Human effective computability*

16.15-17.00 Sambin, *Two principles of dynamic constructivism*

MT

15.30-16.15 Point *Definable sets in topological differential fields*

16.15-17.00 Simon *Type decompositions in NIP theories*

Contributed Talks

ATB G.107

17.00-17.20 Ehrlich, *The Surreal Number Tree*

17.20-17.40 Friend, *Genetic Proofs, Reductions and Rational Reconstruction Proofs*

17.40-18.00 Holeček, *On a rule of propositional function instantiation*

ATB G.205

17.00-17.20 Dobrowolski, *New examples of small Polish structures*

17.20-17.40 Tussupov, *Categoricity and Complexity Relations over Structures With Two Equivalences*

17.40-18.00 Peretyat'kin, *On model-theoretic properties that are not preserved on the pairs of mutually interpretable theories*

ATB G.108

17.00-17.20 Haniková, *On logics of continuous t-norms and their residua*

17.20-17.40 Běhounek, *Infinitesimal calculus over semilinear contraction-free logics*

17.40-18.00 Abdallah, *On an application of Curry-Howard correspondence to quantum mechanics*

ATB G.209

17.00-17.20 Leuştean, *An application of proof mining in nonlinear analysis*

17.20-17.40 Kreuzer, *Non-principal ultrafilters, program extraction and higher order reverse mathematics*

17.40-18.00 Wong, *The model theory of generic cuts*

Wednesday 18th July

Tutorial

9.00-10.00 Zilber, *Model Theory 3*

Plenary Lecture

10.30-11.30 Jones, *Counting rational points on definable sets*

Tutorial

11.30-12.30 Montalbán, *Computability 3*

Plenary Lecture

14.00-15.00 Komjath, *Some results on infinite graphs*

SOCIAL PROGRAMME

Conference Dinner

The conference dinner will be at Nutters Restaurant, Edenfield Road, Norden, Rochdale, OL12 7TT, see <http://www.celebritychefsuk.com/the-chefs/andrew-nutter>, at 20.15 on Tuesday 17th July. Coaches will collect us at 18.45 *sharp* outside the Chemistry Building to take us there, a journey of about 45mins. We should be returning at about 11.30. The cost of the meal (with drinks) is £30 (£15 for students). We need you to sign up for it, and pay, at the reception desk, at latest by 13.00 on Friday 13th.

Outings

For Sunday 15th July two outings are available:

1. **Quarry Bank Mill** - *organizer Jeff Paris*

This restored cotton mill captures the flavour of what it was like to live and work during the Industrial Revolution. (See <http://www.nationaltrust.org.uk/quarry-bank-mill/>) The rail fare from Piccadilly Railway Station to Styal is £4.80 and if you wish I can purchase a ticket for you in advance. Otherwise you will need to purchase a ticket before you board the train. Entrance to the Mill, Apprentices' House and gardens costs £13.10.¹ We will meet by the Information Desk at Piccadilly Station at 12.30 (sharp – the train goes at 12.47 from platform 13 and it won't wait for us!!). There is a cafe at the Mill where you could take a snack lunch, alternatively you can purchase sandwiches etc. at, or on the approach to, Piccadilly Station. Please note that the 1km (approx.) from Styal Station to the Mill will be on foot.

2. **Walk in the Peak District from Edale** - *organizers Alena Vencovská and Mark Kambites*

Subject to the weather there will be a walk in the Peak National Park from the village of Edale up Ringing Roger and along the edge of the Kinder Plateau. Raincoats and sensible shoes are strongly recommended; the walk involves uneven potentially muddy paths and a fair bit of ascent. We will meet at the Information Desk at Piccadilly Station at 10.30 (the train goes at 10.45). The cost of the return train fare is £10.10. If you wish us to get your ticket in advance please let us know by the Saturday. Otherwise you should arrive early enough to purchase your ticket before boarding the train. There will not be any opportunity to buy food on the walk so you should

¹Entry is free if you have a National Trust Membership card.

bring a snack lunch, drink etc., which can easily be purchased beforehand at, or on the approach to, Piccadilly Station. *The final confirmation that the weather allows this walk to take place will be made at lunchtime on the Saturday and also posted on the Conference web site.*

LOCAL INFORMATION

Transportation

The area around the University, especially Oxford Road, is very well served by buses. Most buses going into the city centre are signed for Piccadilly Bus Station (in Piccadilly Gardens) where they terminate. Also in this direction the 147 service goes from outside the Precinct Centre to Piccadilly Railway Station, Monday to Friday. In the other direction the 41,42,43,48,142,143 all go through Rusholme, the 43 ending up (after about 50mins) at Manchester Airport. There are also frequent trains from Piccadilly Railway Station to the airport, journey time from the station about 21mins.

A journey planner is available at
<http://www.traveline-northwest.co.uk/journeyplanner/enterJourneyPlan.do>

For hiring a black cab call ManTax on 0161 230 3330.

Shops

Locally there are some shops (supermarket, stationary, sandwich bars, bookshop, chemist) in the Precinct Centre on Oxford Road. The city centre can be reached by a 20 minute walk, or take any bus signed 'Piccadilly' to the terminus, and offers a very wide range of shops, in particular the Arndale Centre mall on Market St.. Further out there is the enormous Trafford Centre shopping complex (bus route 250 from Booth St. West bus stop).

Money

There are 2 local ATM's outside the banks in the upper Precinct Centre and a further ATM outside the NatWest Bank on the corner of Dover Street and Oxford Road. It is also possible to exchange currency at these banks.

Campus Area Religious Observance Centres

McDougall Prayer Hall (Mosque), McDougall Centre, Burlington St,
see <http://www.manchesterisoc.com/prayer-room-map>

St Peter's Church and Chaplaincy (broad Protestant), by the Computer Science Building,
see <http://www.stpeters.org.uk/>

Manchester Universities' Catholic Chaplaincy, see <http://mucc.org.uk/>, next to The Catholic Church of the Holy Name of Jesus, on Oxford Road opposite the Students' Union,
see <http://www.holyname.co.uk/>

Fire Evacuation

Participants should familiarize themselves with the *Fire Action* notices posted close to the lifts. In the event of the fire alarm sounding (apart from the test at 13.50 each Monday!) participants should leave the building via the clearly marked emergency exits.

Emergencies

Campus Security can be contacted on 69966 (internal) or 01613069966 (external). Details of *First Aid* within the Alan Turing Building are given on the notices posted by the lifts on each floor.

In case of other emergencies call 0161 275 5880 or 0044(0)7854558083.

Local Lunch Venues

- (1) Pi in the Sky, *snacks*.
- (2) University Place, *meals and snacks*.
- (3) Tai Pan, *Chinese, set menu*.
- (4) Umami *South-East Asian, set menu*.
- (5) Sand Bar, *snacks, alcohol*.
- (6) Café Muse, *meals*.
- (7) NCM & Brodsky, *meals and snacks*.
- (8) Business School, *meals and snacks*.
- (9) Veggie Cafe, *vegetarian(!) meals*.
- (10) Christie Bistro, *set menu*.
- (11) KRO Bar, *meals, alcohol*.
- (12) Small World Cafe, *meals*.
- (13) Potters, *pizzas, salads, snacks*.
- (14) Cafe₂O₄, *snacks*.
- (15) Eros, *snacks*.
- (16) Eighth Day, *vegetarian, vegan*

Dining out in Manchester

Manchester has a very varied range of range of cuisine. The Curry Mile in Rusholme, about 1km south of the the University Campus on Oxford Road, is well worth an evening visit for its atmosphere and enormous choice of Indian/Pakistani/Bangladeshi/Persian restaurants (the largest concentration in the UK) whilst the same can be said for the Manchester's city Chinatown (also the largest in the UK) located around Princess St and George St in the city centre. Other suggested possibilities, in no particular order:

- East-Z-East, *Indian*, Princess St, by Charles St, 0161-834-3500.
- El Rincon de Rafa *Spanish*, 244 Deansgate, 0161 839 8819.
- Petra *Middle Eastern*, 267 Upper Brook Street, 0161 274 4441
- Tai Pan, *Chinese*, corner of Upper Brook St. and Brunswick St, 0161-273-2798.
- Tampopo, *Thai*, Albert Sq, 0161-819-1968.
- Zouk, *Indian*, Chester St, by Oxford Road. 0161-2331-090
- Teacup, *tea and cakes, some savoury dishes*, 55 Thomas Street. 0161-832-3233
- Albert's Shed, *European*, 20 Castle St. 0161-839-9818
- Sam's Chop House, *British*, Back Pool Fold, off Cross Street. 0161-834-3210
- The Market Restaurant, *British contemporary, not so cheap*, 104 High Street. 0161-834-3743
- Michael Caine's, *British/contemporary; not cheap*, 107 Piccadilly. 0161-200-5678
- Carluccio's, *Italian*, 3 Hardman Square, Spinningfields. 0161-839-0623
- San Carlo, *Italian, no so cheap*, 42 Kings St West. 0161-834-6226
- Gaucho, *Argentinian, not cheap*, 2a St Mary's Street off Deansgate. 0161-833-4333
- Armenian Taverna, *Armenian and related*, 3/5 Princess Street, Albert Square. 0161-834-9025
- Cafe Istanbul, *Turkish*, 79/81 Bridge Street. 0161-833-9942
- Yang Sing, *Chinese*, 34 Princess Street. 0161-236-2200
- Little Yang Sing, *Chinese*, 17 George Street. 0161-228-7722
- Red Chilli, *Chinese*, 403-419 Oxford Road, 0161-273-1288 and 70-72 Portland Street, 0161-236-2888
- Chaophrya, *Thai*, 19 Chapel Walks, Off Cross Street. 0161-832-8342
- Ning, *Malaysian and other*, 92-94 Oldham Street. 0844 414 5484

Relaxation

For an official guide for visitors go to <http://www.visitmanchester.com/> . Recommended local possibilities include:

The Natural History Museum opposite University Place on Oxford Rd is worth a visit, as are the Museum of Science and Technology (<http://www.mosi.org.uk/>) and the Manchester Imperial War Museum (<http://www.iwm.org.uk/>).

The Royal Northern College of Music (<http://www.rncm.ac.uk/whats-on-mainmenu-47.html>) offers concerts throughout the summer whilst <http://www.prideofmanchester.com/music/tickets> gives details of the various Pop Music gigs in the city, plus what's on in theatres, cinemas, etc.

The City Art Gallery (<http://www.manchestergalleries.org/>) is famous for its Pre-Raphaelite collection whilst the University's Whitworth Gallery (<http://www.whitworth.manchester.ac.uk/>) is well known, amongst other things, for its wallpaper collection.

The Manchester Aquatics Centre on Booth Street West has frequent public swimming sessions (see <http://www.manchestersportandleisure.org/venue/manchester-aquatics-centre>) and there are gym facilities close by at the Sugden Centre on Grosvenor Street (see <http://www.sugdensportscentre.com/>)

In addition the University's Visitor Centre in University Place can provide further information.