

NEW YORK

LICS

**ACM/IEEE Logic in Computer Science
Columbia University • July 2016**

Welcome

The LICS Symposium is an annual international forum on theoretical and practical topics in computer science that relate to logic, broadly construed. LICS 2016 will be hosted at Columbia University in New York City during July 5–8 2016, with affiliated workshops July 9–10.

On the following pages please find the program of the conference along with a list of the workshops. Moreover, a map of the campus and food options near the campus are given.

The symposium is sponsored by ACM SIGLOG and the IEEE Technical Committee on Mathematical Foundations of Computing, in cooperation with the Association for Symbolic Logic and the European Association for Theoretical Computer Science.

Conference Program and Schedule

Tuesday, July 5th

08:45–08:55 12 – Welcome Session (Room SCH501)

08:30–09:00 Coffee (Room SCH501)

**09:00–10:40 1A – Probabilistic Models of Computation
(Room SCH501)**

09:00 *Stochastic mechanics of graph rewriting*

Nicolas Behr, Vincent Danos and Ilias Garnier

09:25 *On the Satisfiability of Some Simple Probabilistic Logics*

Souymodip Chakraborty and Joost-Pieter Katoen

09:50 *Distinguishing Hidden Markov Chains*

Stefan Kiefer and A. Prasad Sistla

10:15 *Quantitative Automata under Probabilistic Semantics*

Krishnendu Chatterjee, Thomas Henzinger and Jan Otop

**09:00–10:40 1B – Decidability
(Room NWC501)**

09:00 *Deciding First-Order Satisfiability when Universal and Existential
Variables are Separated*

Marco Voigt, Christoph Weidenbach and Thomas Sturm

09:25 *The diagonal problem for higher-order recursive schemes is decidable*

Lorenzo Clemente, Paweł Parys, Sylvain Salvati and Igor
Walukiewicz

09:50 *Two-variable logic with a between relation*

Andreas Krebs, Kamal Lodaya, Paritosh Pandya and Howard
Straubing

10:15 *Decidability and Complexity for Quiescent Consistency*

Brijesh Dongol and Rob Hierons

10:40–11:10 Coffee (Room SCH501)

**11:10–12:10 2 – Invited Talk: Pedro Domingoes
(Room SCH501)**

11:10 *Unifying Logical and Statistical AI*
Pedro Domingoes

12:10–13:40 Lunch Break

**13:40–15:20 3A – Proof Theory
(Room SCH501)**

13:40 *From positive and intuitionistic bounded arithmetic to proof complexity*
Anupam Das

14:05 *Goedel's functional interpretation and the concept of learning*
Thomas Powell

14:30 *Understanding Gentzen and Frege Systems for QBF*
Olaf Beyersdorff and Jan Pich

14:55 *Unified Semantics and Proof System for Classical, Intuitionistic and Affine Logics*
Chuck Liang

**13:40–15:20 3B – Model Checking
(Room NWC501)**

13:40 *Data Communicating Processes with Unreliable Channels*
Parosh Aziz Abdulla, C. Aiswarya and Mohamed Faouzi Atig

14:05 *A New Perspective on FO Model Checking of Dense Graph Classes*
Jakub Gajarský, Petr Hlineny, Daniel Lokshantov, Jan Obdrzalek and M. S. Ramanujan

14:30 *Proving Liveness of Parameterized Programs*
Azadeh Farzan, Zachary Kincaid and Andreas Podelski

14:55 *Model and Objective Separation with Conditional Lower Bounds: Disjunction is Harder than Conjunction*
Krishnendu Chatterjee, Wolfgang Dvořák, Monika Henzinger and Veronika Loitzenbauer

15:20–15:50 Coffee (Room SCH501)

**15:50–17:05 4A – Automata Theory
(Room SCH501)**

- 15:50 *Complexity of regular abstractions of one-counter languages*
Mohamed Faouzi Atig, Dmitry Chistikov, Piotr Hofman,
K. Narayan Kumar, Prakash Saivasan and Georg Zetsche
- 16:15 *Two-Way Visibly Pushdown Automata and Transducers*
Luc Dartois, Emmanuel Filiot, Pierre-Alain Reynier and
Jean-Marc Talbot
- 16:40 *Automata on Infinite Trees with Equality and Disequality Constraints
Between Siblings*
Arnaud Carayol, Christof Löding and Olivier Serre

**15:50–17:05 4B – Games and Logic
(Room NWC501)**

- 15:50 *Plays as Resource Terms via Non-idempotent Intersection Types*
Takeshi Tsukada and Luke Ong
- 16:15 *Perfect-information Stochastic Games with Generalized Mean-Payoff
Objectives*
Krishnendu Chatterjee and Laurent Doyen
- 16:40 *Games with bound guess actions*
Thomas Colcombet and Stefan Göller

17:15 History of LICS (Room SCH501)

18:00 Reception (Faculty House)

Wednesday, July 6th

08:30–09:00 Coffee (Room SCH501)

**09:00–10:40 5A – Model Theory
(Room SCH501)**

09:00 *Near-Optimal Lower Bounds on Quantifier Depth and Weisfeiler-Leman Refinement Steps*

Christoph Berkholz and Jakob Nordström

09:25 *Hanf normal form for first-order logic with unary counting quantifiers*

Lucas Heimberg, Dietrich Kuske and Nicole Schweikardt

09:50 *Upper Bounds on the Quantifier Depth For Graph Differentiation in First Order Logic*

Sandra Kiefer and Pascal Schweitzer

10:15 *Querying Visible and Invisible Information*

Michael Benedikt, Pierre Bourhis, Gabriele Puppis and Balder Ten Cate

**09:00–10:40 5B – Induction/Coinduction
(Room NWC501)**

09:00 *Coinduction All the Way Up*

Damien Pous

09:25 *Denotational semantics of recursive types in synthetic guarded domain theory*

Rasmus Ejlers Møgelberg and Marco Paviotti

09:50 *Type Theory based on Dependent Inductive and Coinductive Types*

Henning Basold and Herman Geuvers

10:15 *Program Equivalence is Coinductive*

Dirk Pattinson and Lutz Schröder

10:40–11:10 Coffee (Room SCH501)

**11:10–12:10 6 – Invited Tutorial: Mai Gehrke
(Room SCH501)**

11:10 *Duality in Computer Science*

Mai Gehrke

12:10–13:40 Lunch Break

13:40–15:20 7A – Semantics
(Room COSTAENG)

13:40 *Fixed Points in Quantitative Semantics*
James Laird

14:05 *Ability to Count Messages Is Worth $\Theta(\Delta)$ Rounds in Distributed Computing*
Tuomo Lempinen

14:30 *The Definitional Side of the Forcing*
Guilhem Jaber, Gabriel Lewertowski, Pierre-Marie Pédro, Matthieu Sozeau and Nicolas Tabareau

14:55 *Towards Completeness via Proof Search in the Linear Time Mu-calculus*
Amina Doumane, David Baelde, Lucca Hirschi and Alexis Saurin

13:40–15:20 7B – Monadic Second-Order Logic
(Room NWC501)

13:40 *First-order definability of rational transductions: An algebraic approach*
Emmanuel Filiot, Olivier Gauwin and Nathan Lhote

14:05 *Order Invariance on Decomposable Structures*
Michael Elberfeld, Marlin Frickenschmidt and Martin Grohe

14:30 *Definability equals recognizability for graphs of bounded treewidth*
Mikołaj Bojańczyk and Michał Pilipczuk

14:55 *Monadic second order logic as the model companion of temporal logic*
Silvio Ghilardi and Samuel J. van Gool

15:20–15:50 Coffee (Room SCH501)

15:50–17:05 8A – Linear Logic
(Room COSTAENG)

15:50 *Interaction Graphs: Full Linear Logic*
Thomas Seiller

16:15 *Conflict nets: locally canonical P-time proof nets for MALL*
Dominic Hughes and Willem Heijltjes

16:40 *Infinitary Lambda Calculi from a Linear Perspective*
Ugo Dal Lago

15:50–17:05 8B – Reachability
(Room NWC501)

- 15:50 *First-order logic with reachability for infinite-state systems*
Emanuele D’Osualdo, Roland Meyer and Georg Zetsche
- 16:15 *The Complexity of Coverability in ν -Petri Nets*
Ranko Lazic and Sylvain Schmitz
- 16:40 *Reachability in Two-Dimensional Unary Vector Addition Systems with States is NL-Complete*
Matthias Englert, Ranko Lazic and Patrick Totzke

Thursday, July 7th

08:30–09:00 Coffee (Room SCH501)

09:00–10:40 9A – Hybrid Systems
(Room SCH501)

- 09:00 *Comparing Chemical Reaction Networks: A Categorical and Algorithmic Perspective*
Luca Cardelli, Mirco Tribastone, Max Tschaikowski and Andrea Vandin
- 09:25 *A categorical approach to open and interconnected dynamical systems*
Brendan Fong, Paolo Rapisarda and Pawel Sobocinski
- 09:50 *Differential Refinement Logic*
Sarah Loos and André Platzer
- 10:15 *On Recurrent Reachability for Continuous Linear Dynamical Systems*
Ventsislav Chonev, Joel Ouaknine and James Worrell

09:00–10:40 9B – Category Theory
(Room NWC501)

- 09:00 *Semantics for probabilistic programming: higher-order functions, continuous distributions, and soft constraints*
Sam Staton, Hongseok Yang, Chris Heunen, Ohad Kammar and Frank Wood

09:25 *Interacting Frobenius Algebras are Hopf.*

Ross Duncan and Kevin Dunne

09:50 *Semi-galois Categories I: The Classical Eilenberg Variety Theory*

Takeo Uramoto

10:15 *A bifibrational reconstruction of Lawvere's presheaf hyperdoctrine*

Paul-André Mellies and Noam Zeilberger

10:40–11:10 Coffee (Room SCH501)

11:10–12:10 10 – Invited Talk: Maurice Herlihy

(Room SCH501)

11:10 *Blockchains and the Logic of Accountability*

Maurice Herlihy

12:10–13:40 Lunch Break

13:40–15:45 11A – Type Theory

(Room SCH501)

13:40 *A Mechanization of the Blakers-Massey Connectivity Theorem in Homotopy Type Theory*

Kuen-Bang Hou, Eric Finster, Daniel R. Licata and Peter Lumsdaine

14:05 *Hybrid realizability for intuitionistic and classical choice*

Valentin Blot

14:30 *Trace semantics for polymorphic references*

Guilhem Jaber and Nikos Tzevelekos

14:55 *Constructions with Non-Recursive Higher Inductive Types*

Nicolai Kraus

15:20 *A constructive function-theoretic approach to topological compactness*

Iosif Petrakis

13:40–15:45 11B – Constraint Solving

(Room NWC501)

13:40 *The algebraic dichotomy conjecture for infinite domain Constraint Satisfaction Problems*

Libor Barto and Michael Pinsker

- 14:05 *Reducts of finitely bounded homogeneous structures, and lifting tractability from finite-domain constraint satisfaction*
Manuel Bodirsky and Antoine Mottet
- 14:30 *Weak consistency notions for all the CSPs of bounded width*
Marcin Kozik
- 14:55 *Graphs of relational structures: restricted colours*
Andrei Bulatov
- 15:20 *The Power of Arc Consistency for CSPs Defined by Partially-Ordered Forbidden Patterns*
Martin C. Cooper and Stanislav Živný
- 15:20–15:50 Coffee (Room SCH501)**
- 15:50–17:15 12 – Awards Session (Room SCH501)**
- 17:15–18:00 Break**
- 18:00 LICS Business Meeting (Room SCH501)**

Friday, July 8th

- 08:30–09:00 Coffee (Room SCH501)**
- 09:00–10:40 13A – Probabilistic Models of Computation (Room SCH501)**
- 09:00 *Reasoning about Recursive Probabilistic Programs*
Federico Olmedo, Benjamin Lucien Kaminski, Joost-Pieter Katoen and Christoph Matheja
- 09:25 *Healthiness from Duality*
Wataru Hino, Hiroki Kobayashi, Ichiro Hasuo and Bart Jacobs
- 09:50 *Kolmogorov Extension, Martingale Convergence, and Compositionality of Processes*
Dexter Kozen
- 10:15 *Quantitative Algebraic Reasoning*
Radu Mardare, Prakash Panangaden and Gordon Plotkin

**09:00–10:40 13B – Algebraic Methods
(Room NWC501)**

- 09:00 *Rewriting modulo symmetric monoidal structure*
Filippo Bonchi, Fabio Gadducci, Aleks Kissinger, Pawel Sobocinski and Fabio Zanasi
- 09:25 *Effective Brenier’s Theorem: Applications to Computable Analysis and Algorithmic Randomness*
Alex Galicki
- 09:50 *Quantifier Free Definability on Infinite Algebras*
Bakh Khousainov
- 10:15 *Factor Varieties and Symbolic Computation*
Antonino Salibra, Giulio Manzonetto and Giordano Favro

10:40–11:10 Coffee (Room SCH501)

**11:10–12:10 14 – Invited Tutorial: Joost Pieter-Katoen
(Room SCH501)**

- 11:10 *The Probabilistic Model Checking Landscape*
Joost Pieter-Katoen

12:10–13:40 Lunch Break

**13:40–15:20 15A – Logics of Programs
(Room COSTAENG)**

- 13:40 *Proving Differential Privacy via Probabilistic Couplings*
Gilles Barthe, Marco Gaboardi, Benjamin Grégoire, Justin Hsu and Pierre-Yves Strub
- 14:05 *On Thin Air Reads: Towards an Event Structures Model of Relaxed Memory*
Alan Jeffrey and James Riely
- 14:30 *Towards Compositional Feedback in Non-Deterministic and Non-Input-Receptive Systems*
Viorel Preoteasa and Stavros Tripakis
- 14:55 *Divide and Congruence II: Delay and Weak Bisimilarity*
Wan Fokkink and Rob Van Glabbeek

**13:40–15:20 15B – Decidability
(Room NWC501)**

13:40 *How unprovable is Rabin's decidability theorem?*

Leszek Aleksander Kołodziejczyk and Henryk Michalewski

14:05 *Solvability of Matrix-Exponential Equations*

Joel Ouaknine, Amaury Pouly, Joao Sousa-Pinto and James Worrell

14:30 *Order-Invariance of Two-Variable Logic is Decidable*

Thomas Zeume and Frederik Harwath

14:55 *A step up in expressiveness of decidable fixpoint logics*

Michael Benedikt, Pierre Bourhis and Michael Vanden Boom

15:20–15:50 Coffee (Room NWC501)

**15:50–17:05 16A – Complexity
(Room COSTAENG)**

15:50 *Church Meets Cook and Levin*

Damiano Mazza

16:15 *Complexity Theory of (Functions on) Compact Metric Spaces*

Akitoshi Kawamura, Florian Steinberg and Martin Ziegler

16:40 *Semantically Acyclic Conjunctive Queries under Functional Dependencies*

Diego Figueira

**15:50–17:05 16B – Automata Theory
(Room NWC501)**

15:50 *A Generalised Twinning Property for Minimisation of Cost Register Automata*

Laure Daviaud, Pierre-Alain Reynier and Jean-Marc Talbot

16:15 *Invisible Pushdown Languages*

Eryk Kopczynski

16:40 *Minimization of Symbolic Tree Automata*

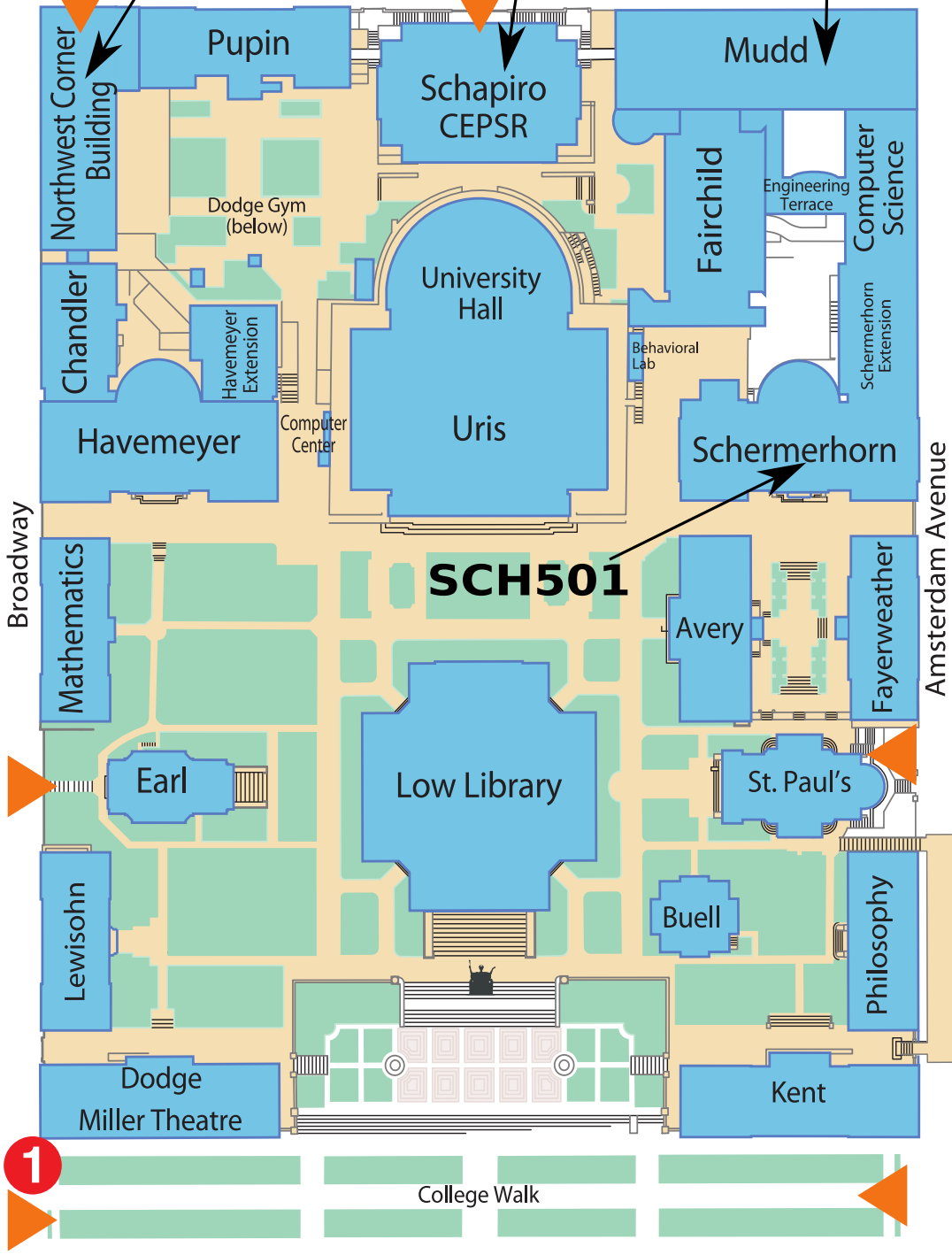
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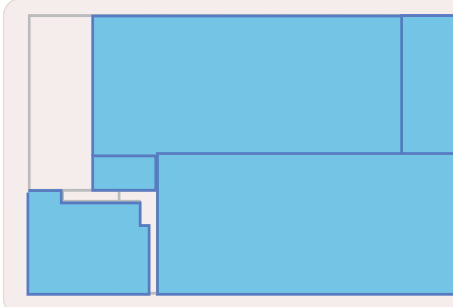
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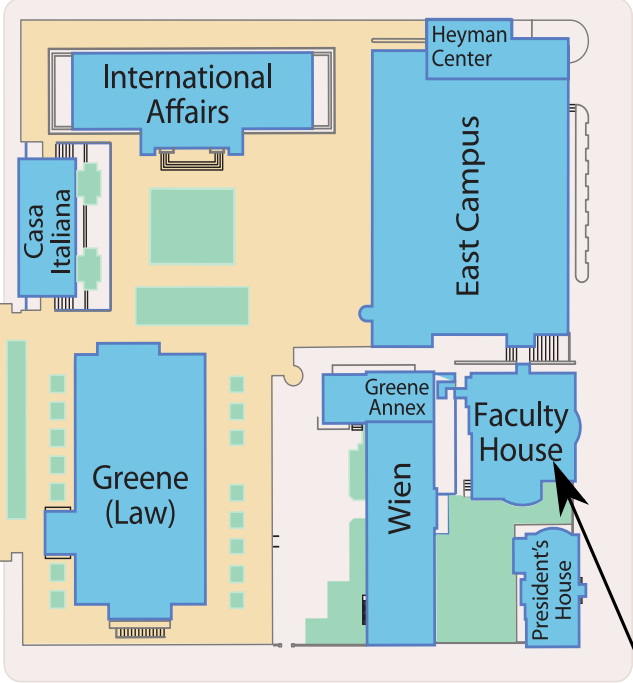


West 119th Street



West 118th Street

Amsterdam Avenue



West 116th Street

Reception

Legend

-  Columbia buildings or offices
-  Sidewalks and lower level paths
-  Upper level paths
-  1 Subway entrances
-  Campus gateways
-  Walls and fences
-  Stairways

Morningside Drive

Schedule of Workshops

Details about the workshops, their sessions, and rooms are given. All of them take place in the Mudd Building. For the programs of the workshops, please see the corresponding webpages.

Saturday, July 9th

08:30–09:00 Coffee (Room MUDD644)

09:00–12:10 LSB – *Workshop on Logic and Systems Biology*
(Room MUDD627) Web: <http://perso.ens-lyon.fr/russell.harmer/lsb6.html>

09:00–12:10 LMW – *Logic Mentoring Workshop*
(Room MUDD633) Web: <http://lics.rwth-aachen.de/lics16/lmw.html>

12:10–13:40 Lunch Break

13:40–17:15 LSB – *Workshop on Logic and Systems Biology*
(Room MUDD627)

13:40–17:15 LMW – *Logic Mentoring Workshop*
(Room MUDD633)

Sunday, July 10th

08:30–09:00 Coffee (Room MUDD633)

09:00–12:10
(Room MUDD627) NLCS – *Workshop on Natural Language and Computer Science*

Web: <http://www.indiana.edu/~iulg/nlcs.html>

09:00–12:10 SR – *International Workshop on Strategic Reasoning*

(Room MUDD633) Web: <http://www.strategicreasoning.net/>

09:00–12:10 LOLA – *Syntax and Semantics of Low-Level Languages*

(Room MUDD644) Web: <http://lola.cse.buffalo.edu/>

12:10–13:40 Lunch Break

13:40–17:15
(Room MUDD627) NLCS – *Workshop on Natural Language and Computer Science*

13:40–17:15 SR – *International Workshop on Strategic Reasoning*

(Room MUDD633)

13:30–17:30 LOLA – *Syntax and Semantics of Low-Level Languages*

(Room MUDD644)

Lunch options

Please note that we have not been to all the restaurants and grocery stores listed below. We only listed those that are located in Morningside Heights and have a 4 Yelp star rating and more than 50 reviews.

Name	Address	About	Price level
Thai Market	960 Amsterdam Ave	Thai with lunch specials	\$\$
Doaba Deli	945 Amsterdam Ave	Indian, Vegetarian	\$
Flat Top	1241 Amsterdam Ave	American (new), Cafes	\$\$
Pisticci	125 La Salle St	Italian	\$\$
Arco Cafe	886 Amsterdam Ave	Italian	\$\$
Taqueria y Fonda La Mexicana	968 Amsterdam Ave	Mexican	\$
Milano Market	2892 Broadway	Grocery, Deli	\$\$



Pisticci

Flat Top

Milano Market

Columbia Campus

Thai Market

Taqueria y Fonda La Mexicana

Doaba Deli

Arco Cafe

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