Research interests
Constraint Satisfaction: algorithms and computational complexity.
Universal algebra, combinatorics, model theory, Ramsey theory.

Qualifications
Mathematics, Habilitation, Universite Paris 7
Award Date: 19 Jan 2012

Employment
Academic Staff
Chair of Algebra and Discrete Structures
Technische Universität Dresden
1 Aug 2014 → present

Academic Staff
Faculty of Computer Sciences
Technische Universität Dresden
1 Aug 2014 → present

Research outputs
The Complexity of Resilience Problems via Valued Constraint Satisfaction Problems

Forbidden Tournaments and the Orientation Completion Problem

The smallest hard trees

Network Satisfaction Problems Solved by k-Consistency

On the Descriptive Complexity of Temporal Constraint Satisfaction Problems.

Network Satisfaction Problems Solved by k-Consistency

The lattice of clones of self-dual operations collapsed
**Canonical Polymorphisms of Ramsey Structures and the Unique Interpolation Property.**

**Datalog-Expressibility for Monadic and Guarded Second-Order Logic**

**Network Satisfaction for Symmetric Relation Algebras with a Flexible Atom.**

**On Logics and Homomorphism Closure**

**Piecewise linear valued constraint satisfaction problems with fixed number of variables**

**Tractable Combinations of Theories via Sampling**

**Universal Horn Sentences and the Joint Embedding Property.**

**Temporal Constraint Satisfaction Problems in Fixed-Point Logic**

**Two-element structures modulo primitive positive constructability**

**ASNP: A Tame Fragment of Existential Second-Order Logic**

**Hardness of Network Satisfaction for Relation Algebras with Normal Representations.**

**The Complexity of Combinations of Qualitative Constraint Satisfaction Problems**

**Tractable Combinations of Temporal CSPs.**

**Topology is relevant (in a dichotomy conjecture for infinite-domain constraint satisfaction problems)**

**Constraint satisfaction problems for reducts of homogeneous graphs**
Topology is relevant (in the infinite-domain dichotomy conjecture for constraint satisfaction problems).

Submodular functions and valued constraint satisfaction problems over infinite domains

The complexity of disjunctive linear diophantine constraints

A universal-algebraic proof of the complexity dichotomy for Monotone Monadic SNP

A dichotomy for first-order reducts of unary structures

A counterexample to the reconstruction of ω-categorical structures from their endomorphism monoid

Tropically Convex Constraint Satisfaction

The universal homogeneous binary tree

Discrete temporal constraint satisfaction problems

A polynomial-time algorithm for median-closed semilinear constraints.
Bodirsky, M. & Mamin, M., 2018, In: CoRR. abs/1808.10068

Classification transfer for qualitative reasoning problems

Classification Transfer for Qualitative Reasoning Problems.

Complexity of Combinations of Qualitative Constraint Satisfaction Problems

Finite relation algebras with normal representations
The complexity of phylogeny constraint satisfaction problems

A model-theoretic view on qualitative constraint reasoning

Constraint Satisfaction Problems over Numeric Domains.

Reconstructing the topology of clones

The reducts of the homogeneous binary branching C-relation

Reducts of structures and maximal-closed permutation groups

Reducts of finitely bounded homogeneous structures, and lifting tractability from finite-domain constraint satisfaction

Distance constraint satisfaction problems

Max-closed semilinear constraint satisfaction

Schaefer's theorem for graphs

TOPOLOGICAL BIRKHOFF

The complexity of constraint satisfaction problems

Ramsey classes: Examples and constructions

Constraint satisfaction problems over the integers with successor
Tractability of quantified temporal constraints to the max

The 42 reducts of the random ordered graph

Minimal functions on the random graph

Complexity of existential positive first-order logic

Constraint satisfaction tractability from semi-lattice operations on infinite sets

Datalog and constraint satisfaction with infinite templates

Decidability of definability

Complexity Classification in Infinite-Domain Constraint Satisfaction

Equivalence Constraint Satisfaction Problems.

Essential Convexity and Complexity of Semi-Algebraic Constraints

Horn versus full first-order: Complexity dichotomies in algebraic constraint satisfaction

On the Complexity of MMSNP

The complexity of surjective homomorphism problems - A survey

Tractable Set Constraints.

Limit Behavior of Locally Consistent Constraint Satisfaction Problems

Boltzmann Samplers, Pólya Theory, and Cycle Pointing
RCC8 is Polynomial on Networks of Bounded Treewidth.

Reducts of Ramsey structures

The Complexity of Rooted Phylogeny Problems

Finite trees are Ramsey under topological embeddings

The complexity of temporal constraint satisfaction problems
Bodirsky, M. & Kára, J., 1 Jan 2010, In: Journal of the ACM.

Peek arc consistency

On the Scope of the Universal-Algebraic Approach to Constraint Satisfaction

Quantified Equality Constraints

The reducts of equality up to primitive positive interdefinability.

aleph_0-categorical Structures: Endomorphisms and Interpretations

All reducts of the random graph are model-complete

Relatively quantified constraint satisfaction

Integer programming with 2-variable equations and 1-variable inequalities.

Integer Programming with 2-Variable Equations and 1-Variable Inequalities (conference contribution)

Maximal infinite-valued constraint languages.

Qualitative Temporal and Spatial Reasoning Revisited
Semilinear Program Feasibility.

A Fast Algorithm and Datalog Inexpressibility for Temporal Reasoning

A Fast Algorithm and Lower Bound for Temporal Reasoning

Constraint Satisfaction Problems with Infinite Templates.

Generating unlabeled connected cubic planar graphs uniformly at random

Non-dichotomies in Constraint Satisfaction Complexity.

The Complexity of Equality Constraint Languages

Oligomorphic clones

Generating labeled planar graphs uniformly at random

Determining the consistency of partial tree descriptions

Cores of countably categorical structures
Bodirsky, M., 25 Jan 2007, In: Logical methods in computer science. 3, 1, p. 1–16

An unbiased pointing operator for unlabeled structures, with applications to counting and sampling.

Enumeration and Asymptotic Properties of Unlabeled Outerplanar Graphs

Enumeration and limit laws for series-parallel graphs

Maximal Infinite-Valued Constraint Languages (conference contribution)

Qualitative Temporal and Spatial Reasoning Revisited (conference contribution)
Random cubic planar graphs.

On the logical complexity of convex polygon dissections

Collapsibility in Infinite-Domain Quantified Constraint Satisfaction.

Constraint Satisfaction with Countable Homogeneous Templates

Generating Outerplanar Graphs Uniformly at Random

Enumeration and limit laws of series-parallel graphs

Enumeration of Unlabeled Outerplanar Graphs

Locally Consistent Constraint Satisfaction Problems with Binary Constraints.

Sampling Unlabeled Biconnected Planar Graphs.

The Core of a Countably Categorical Structure
Bodirsky, M., 2005

A new algorithm for normal dominance constraints.

Efficiently Computing the Density of Regular Languages.

Constraint Satisfaction with Countable Homogeneous Templates

Pure Dominance Constraints
Bodirsky, M. & Kutz, M., 2002

Beta Reduction Constraints.

Activities
Generic Structures for Monotone Monadic Second-Order Logic
Bodirsky, M. (Speaker)
Model-theoretic Challenges in Constraint Satisfaction
Bodirsky, M. (Speaker)
Sept 2023

Valued Constraint Satisfaction Problems and Resilience in Database Theory
Bodirsky, M. (Speaker)
Mar 2023

Wiley Online Library (Publisher)
Bodirsky, M. (Senior editor)
1 Jan 2023 → 31 Dec 2028

Network Satisfaction Problems solved by k-Consistency
Bodirsky, M. (Speaker)
2023

The smallest hard trees
Bodirsky, M. (Speaker)
Jul 2022

Complexity of Constraint Satisfaction
Bodirsky, M. (Speaker)
Jun 2022

On the Intersection of Datalog and Guarded Second-Order Logic
Bodirsky, M. (Speaker)
Jun 2022

The Almost-Sure Theories of Classes Defined by Forbidden Homomorphisms
Bodirsky, M. (Speaker)
Jun 2022

CSP Complexity Classification Transfer
Bodirsky, M. (Speaker)
May 2022

Minor Identities and Primitive Positive Constructions
Bodirsky, M. (Speaker)
Jun 2021

The amazing power of primitive positive constructions
Bodirsky, M. (Speaker)
Apr 2021

Oligomorphic Clones
Bodirsky, M. (Speaker)
Feb 2021

ACM Press (Publisher)
Bodirsky, M. (Reviewer)
1 Oct 2020 → 1 Jan 2028
Amalgamation SNP
Bodirsky, M. (Speaker)
Dec 2019

Structures with small orbit growth
Bodirsky, M. (Speaker)
Dec 2019

Complexity of Constraint Satisfaction in 2019
Bodirsky, M. (Speaker)
Nov 2019

The Feder-Vardi-Kun-Bulatov-Zhuk Dichotomy for MMSNP, via Ramsey Theory
Bodirsky, M. (Speaker)
Jul 2019

The Connection between Stochastic Games and Constraint Satisfaction
Bodirsky, M. (Speaker)
Mar 2019

No Weakest Height-one Strong Maltsev Condition
Bodirsky, M. (Speaker)
Feb 2019

Reducing Infinite-Domain CSPs to Finite-Domain CSPs
Bodirsky, M. (Speaker)
Jun 2018

The Dichotomy for Montone Monadic SNP via Extreme Amenability
Bodirsky, M. (Speaker)
Mar 2018

The Dichotomy for Montone Monadic SNP via Extreme Amenability
Bodirsky, M. (Speaker)
Mar 2018

The complexity of constraint satisfaction problems over the rational numbers
Bodirsky, M. (Speaker)
Feb 2018

Complexity Classifications for Fragments of Existential Second-Order Logic
Bodirsky, M. (Speaker)
Jan 2018

The complexity of constraint satisfaction problems over the rational numbers
Bodirsky, M. (Speaker)
Dec 2017

A dichotomy for first-order reducts of unary structures
Bodirsky, M. (Speaker)
Jun 2017
The tractability conjecture for finitely bounded homogeneous structures
Bodirsky, M. (Speaker)
Mar 2017

Prizes
DFG-Promotionsstipendium
Bodirsky, Manuel (Recipient), 2001

ERC Consolidator Grant
Bodirsky, Manuel (Recipient), 2016

ERC Starting Grant
Bodirsky, Manuel (Recipient), 2011

Günter-Holz-Medaille
Bodirsky, Manuel (Recipient), 2001

POCOCOP
Bodirsky, Manuel (Recipient), Barto, Libor (Recipient) & Pinsker, Michael (Recipient), 25 Oct 2022