

# JOSHUA BLINKHORN

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## PERSONAL DETAILS

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Name: Joshua Lewis Blinkhorn

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Telephone: (+44)7719 773541

Date of birth: 18-09-1984

Nationality: British

## ACADEMIC POSITIONS

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**Friedrich Schiller University, Jena - Postdoctoral Researcher in Computer Science**

Conducting research and lecturing in proof complexity.

*from September 2018*

## EDUCATION

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**Leeds University - PhD**

*October 2015 - December 2019*

Thesis title: *Quantified Boolean Formulas: Proof Complexity and Models of Solving.*

Supervised by Professor Olaf Beyersdorff.

**Open University - First Class BSc. in Mathematics**

*September 2009 - June 2015*

Average marks of 98% (coursework) and 96% (examinations).

**Huddersfield New College, Huddersfield, West Yorkshire**

*September 2001 - July 2003*

A-levels in Mathematics (B), Music (B) and Music Technology (A), and an AS-level in Politics (A).

**Crossley Heath Grammar School, Halifax, West Yorkshire**

*September 1996 - July 2001*

Six GCSEs at grade A\* and four GCSEs at grade A.

## JOURNAL PUBLICATIONS

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Beyersdorff, O., Blinkhorn, J.: *A Simple Proof of QBF Hardness.*

Information Processing Letters (IPL), 2021

Beyersdorff, O., Blinkhorn, J., Mahajan, M.: *Building Strategies into QBF Proofs.*

Journal of Automated Reasoning (JAR), 65(1), 2021

Beyersdorff, O., Blinkhorn, J.: *Dynamic QBF Dependencies in Reduction and Expansion.*

ACM Transactions on Computational Logic (ToCL), 21(2), 2020.

Beyersdorff, O., Blinkhorn, J.: *Lower Bound Techniques for QBF Expansion.*

Theory of Computing Systems (ToCS), 64(3), 2020.

Beyersdorff, O., Blinkhorn, J., Hinde, L.: *Size, Cost and Capacity: A Semantic Technique for Hard Random QBFs.*

Logical Methods in Computer Science (LMCS) 15(1), 2019.

Beyersdorff, O., Blinkhorn, J., Chew, L., Schmidt, R., Suda, M.: *Reinterpreting Dependency Schemes: Soundness Meets Incompleteness in DQBF.*

Journal of Automated Reasoning (JAR), 63(3), 2019.

## CONFERENCE PUBLICATIONS

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- Blinkhorn, J., Peitl, T., Slivovsky, F.: *Davis and Putnam meet Henkin: Solving DQBF with Resolution*. International Conference on Theory and Practice of Satisfiability Testing (SAT), 2021 (in press).
- Beyersdorff, O., Blinkhorn, J., Mahajan, M., Peitl, T., Sood, G.: *Hard QBFs for Merge Resolution*. Foundations of Software Technology and Theoretical Computer Science (FSTTCS), 2020.
- Beyersdorff, O., Blinkhorn, J., Mahajan, M.: *Hardness Characterisations and Size-Width Lower Bounds for QBF Resolution*. Logic in Computer Science (LiCS), 2020.
- Beyersdorff, O., Blinkhorn, J., Peitl, T.: *Strong (D)QBF Dependency Schemes via Tautology-free Dependency Schemes*. International Conference on Theory and Practice of Satisfiability Testing (SAT), 2020.
- Beyersdorff, O., Blinkhorn, J.: *Proof Complexity of QBF Symmetry Recomputation*. International Conference on Theory and Practice of Satisfiability Testing (SAT), 2019.
- Beyersdorff, O., Blinkhorn, J., Mahajan, M.: *Building Strategies into QBF Proofs*. Symposium on Theoretical Aspects of Computer Science (STACS), 2019.
- Beyersdorff, O., Blinkhorn, J.: *Dynamic Dependency Awareness for QBF*. International Joint Conference on Artificial Intelligence (IJCAI), 2019.
- Beyersdorff, O., Blinkhorn, J.: *Genuine Lower Bounds for QBF Expansion*. Symposium on Theoretical Aspects of Computer Science (STACS), 2018.
- Beyersdorff, O., Blinkhorn, J., Hinde, L.: *Size, Cost and Capacity: A Semantic Technique for Hard Random QBFs*. Innovations in Theoretical Computer Science (ITCS), 2018.
- Blinkhorn, J., Beyersdorff, O.: *Shortening QBF Proofs with Dependency Schemes*. International Conference on Theory and Practice of Satisfiability Testing (SAT), 2017. **Best paper award.**
- Beyersdorff, O., Blinkhorn, J.: *Dependency Schemes in QBF Calculi: Semantics and Soundness*. International Conference on Principles and Practice of Constraints Programming (CP), 2016.

## TALKS

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Conference talks for publications listed above are not included.

*Hardness Characterisations and Size-Width Lower Bounds for QBF Resolution*. SAT and Interactions, Dagstuhl, February 2020.

*Building Strategies into QBF Proofs*. TU Wien, Vienna, September 2019.

Institute for Mathematical Sciences, Chennai, February 2019.

*Size, Cost and Capacity: A Semantic Technique for Hard Random QBFs*. Proof Complexity Workshop, Oxford, July 2018.

British Colloquium on Theoretical Computer Science (BCTCS), Royal Holloway, March 2018.

*Dependency Schemes: Semantics and Soundness in QBF Calculi*. SAT and Interactions, Dagstuhl, September 2016.  
QBF Workshop, Bordeaux, July 2016.

*Dependency Schemes and Soundness in QBF Calculi*. Logic Colloquium, ASL European summer meeting, Leeds, August 2016.

## TEACHING

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### **Friedrich Schiller University, Jena**

*Quantified Boolean Formulas: Solving and Proofs*

Lecture, Summer Semester 2021 (current)

*Algorithmic Proofs*

Laboratory course, Summer Semester 2019, Winter Semester 2020/2021

*Cryptography*

Laboratory course, Winter Semester 2019/2020

### **University of Leeds**

*Procedural Programming*

Practical demonstrating and marking of coursework for two presentations, 2016 and 2018.