

## Somnath Sikdar

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### CONTACT INFORMATION

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### RESEARCH INTERESTS

Algorithms in general and, in particular, fixed-parameter, exact and approximation algorithms.

### EDUCATION

**The Institute of Mathematical Sciences**, Chennai, Tamil Nadu, India.

Ph.D. Candidate, Theoretical Computer Science, August 2003 (expected date of graduation: September 2009).

- Dissertation Topic: *Parameterizations From the Extremes: Feasible Parameterizations of Some NP-Optimization Problems.*
- Advisor: Venkatesh Raman.

**The Indian Statistical Institute**, Kolkata, West Bengal, India.

M.Tech in Computer Science, (2001–2003).

### PUBLICATIONS

Daniel Lokshtanov, Venkatesh Raman, Saket Saurabh, Somnath Sikdar. *On the Directed Degree Preserving Spanning Tree Problem.* In Proceedings of the 4th International Workshop on Parameterized and Exact Computation (IWPEC 2009), Springer LNCS. To appear.

Geevarghese Philip, Venkatesh Raman, Somnath Sikdar. *Polynomial Kernels for the Dominating Set Problem in  $K_{i,j}$ -Free and Degenerate Graphs.* In Proceedings of the 17th Annual European Symposium on Algorithms (ESA 2009).

Daniel Lokshtanov, Saket Saurabh, Somnath Sikdar. *Simpler Parameterized Algorithm for OCT.* In Proceedings of the 20th International Workshop on Combinatorial Algorithms (IWOCA 2009).

Neeldhara Misra, Venkatesh Raman, Saket Saurabh, Somnath Sikdar. *Budgeted Unique Coverage and Color-Coding.* To appear in the proceedings of the 4th Computer Science Symposium in Russia, CSR 2009.

Sounaka Mishra, Venkatesh Raman, Saket Saurabh and Somnath Sikdar. *König Deletion Sets and Vertex Covers Above the Matching Size.* Proceedings of the 19th International Symposium on Algorithms and Computation (ISAAC 2008), Springer LNCS, Vol. 5369, pp. 836-847.

Michael Dom and Somnath Sikdar. *The Parameterized Complexity of the Rectangle Stabbing Problem.* Proceedings of the 2nd Frontiers of Algorithmics Workshop (FAW 2008), Springer LNCS Vol. 5059, pp. 67-78, 2008.

Hannes Moser, Venkatesh Raman, Somnath Sikdar. *The Complexity of the Unique Coverage Problem.* Proceedings of the 18th International Symposium on Algorithms and Computation (ISAAC 2007) Springer LNCS Vol. 4835, pp. 621-631. An extended version is in preparation.

Sounaka Mishra, Venkatesh Raman, Saket Saurabh, Somnath Sikdar, C. R. Subramanian. *The Complexity of Finding Subgraphs whose Matching Number Equals the Vertex Cover Number.* Proceedings of the 18th International Symposium on Algorithms and Computation (ISAAC 2007) Springer LNCS Vol. 4835, pp. 268-279. An extended version is under preparation.

Hannes Moser, Somnath Sikdar. *Parameterized Complexity of the Induced Matching Problem in Planar Graphs*. To appear in Discrete Applied Mathematics. A preliminary version appeared in Frontiers of Algorithms Workshop (FAW 2007), Lanzhou, China. Springer LNCS, Vol. 4613, pp. 325-336.

Venkatesh Raman, Somnath Sikdar. *Parameterized Complexity of the Induced Subgraph Problem in Directed Graphs*. Information Processing Letters, Vol. 104, pp. 79-85, 2007.

Meena Mahajan, Venkatesh Raman, Somnath Sikdar. *Parameterizing NP-Optimization Problems Above or Below Guaranteed Values*. To appear in the Journal of Computer and System Sciences. A preliminary version appeared in the proceedings of the 2nd International Workshop on Parameterized and Exact Computation (IWPEC 2006), Springer-Verlag, LNCS Vol. 4169, pp. 38-49, 2006.

Venkatesh Raman, Saket Saurabh, Somnath Sikdar. *Improved Exact Algorithms for Vertex Bipartization and Other Problems*. Theory of Computing Systems, Vol. 41, pp. 563-587, 2007. A preliminary version appeared in the proceedings of the 9th Italian Conference on Theoretical Computer Science, ICTCS 2005. Springer Verlag LNCS Vol. 3701, pp 375-389, 2005.

Avishek Adhikari, Somnath Sikdar. *A new  $(2, n)$ -Visual Threshold Scheme for Color Images*. Indocrypt 2003, Springer-Verlag, LNCS Vol. 2904, pp. 148-161, 2003.

#### MANUSCRIPTS

Neeldhara Misra, Geevarghese Philip, Venkatesh Raman, Saket Saurabh, Somnath Sikdar. *Parameterized Algorithms for Connected Feedback Vertex Set*

#### ACADEMIC EXPERIENCE

**The Institute of Mathematical Sciences**, Chennai, Tamil Nadu, India.

*Graduate Student*. (August 2003 - present)

Includes current Ph.D research and Ph.D. level course-work.

*Instructor* (Courses co-taught with Venkatesh Raman.)

- Parameterized Complexity (August 2008–December 2008).
- Summer Course on Parameterized Complexity (May 2008–June 2008).
- Parameterized Complexity (August 2007–December 2007).
- Summer Course on Parameterized Complexity and Exact Algorithms (May 2007–June 2007).

*DST-DAAD Project Participant* (July 2006–May 2008)

Participant of the DST-DAAD project titled *Provably Efficient Algorithms for Computationally Hard Problems* between Venkatesh Raman, IISc, Chennai, India and Rolf Niedermeier, FSU, Jena, Germany. This included two academic visits to the Friedrich-Schiller University, Jena, Germany (August 2006–October 2006 and June 2007–July 2007).

#### PRESENTATIONS

*Parameterized Complexity of the König Vertex Deletion Problem*. At the 19th International Symposium on Algorithms and Computation (ISAAC 2008), Gold Coast, Australia.

*König Subgraph Problems and the Above Guarantee Vertex Cover Problem*. At the Indian Algorithms Workshop, Khandala, October 2008.

*The Parameterized Complexity of the Unique Coverage Problem*. At the 18th International Symposium on Algorithms and Computation (ISAAC 2007), Sendai, Japan.

*The Complexity of finding König-Egerváry Subgraphs*. At the 18th International Symposium on

Algorithms and Computation (ISAAC 2007), Sendai, Japan.

*Parameterizing MAX SNP Problems Above Guaranteed Values.* At the 2nd International Workshop on Parameterized and Exact Computation (IWPEC 2006), ETH Zürich, Switzerland.

*Designing Exact Algorithms by Enumerating Maximal Independent Sets.* At Friedrich-Schiller University, Jena, Germany, 2006.

*Parameterized Complexity of the Induced Subgraph Problem.* At Friedrich-Schiller University, Jena, Germany, 2006.

*Exact Exponential Algorithms for Vertex Bipartization and Other Problems.* At the 9th Italian Conference on Theoretical Computer Science (ICTCS 2005), Siena, Italy.

*Parameterized Complexity and Exact Algorithms.* At the University of Pisa, 2005.

RECOMMENDERS

Venkatesh Raman, The Institute of Mathematical Sciences, Chennai, India.  
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Meena Mahajan, The Institute of Mathematical Sciences, Chennai, India.  
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Rolf Niedermeier, The Friedrich-Schiller-University, Jena, Germany.  
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