

CURRICULUM VITAE

EMIL SAUCAN

**Department of Mathematics, Technion – Israel Institute of
Technology, Haifa 32000**

Place of Birth: Bucharest, Romania

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1 EDUCATION

Ph.D. 2005 in Mathematics. Supervisor: Prof. Uri Srebro. Thesis subject: *The Existence of Quasimeromorphic Mappings*. Department of Mathematics, Technion – Israel Institute of Technology, Haifa, Israel.

M.Sc. 1989 in Mathematics. Supervisor: Prof. Uri Srebro. Thesis subject: *Kleinian Groups*. Department of Mathematics, Technion - Israel Institute of Technology, Haifa, Israel.

B.Sc. 1984 in Mathematics. Avg. 9.51, with specialization in Algebra. Final Project: *Homotopy Groups* (grade: 10), with Recommendation for Research and Higher Education Teaching, Faculty of Mathematics, Bucharest University, Romania.

2 FELLOWSHIPS and AWARDS

2007-2008 Lady Davis Post-doctoral fellowship, Hebrew University, Jerusalem (declined).

2005-2007 Winner of the Andrew and Erna Finci Viterbi Post-doctoral fellowship, Electrical Engineering Department, Technion.

In 1997, I have won the Outstanding Teaching Assistant prize from the Technion.

I have won several prizes from Mathematics and Physics competitions in Romania. Among the prize-winning works: *Sphere Packing and Applications* and *The Kerr Effect*.

3 RESEARCH GRANTS

As member of the VISL Laboratory team, the Electrical Engineering Department, Technion, I have obtained, in collaboration with the other members of the group, a number of National and Industrial Research Grants, in particular the Dvora grant and “Elbit” (\$20,000, principal researcher).

4 ACADEMIC and PROFESSIONAL EXPERIENCE

Current Position: Senior Research Fellow, Mathematics Department, Technion, Haifa, Israel.

2010: Lecturer, Haifa University (The Dr. Moses Strauss Department of Marine Geosciences – Leon H. Charney School of Marine Sciences).

2008-2009: Teaching Post-doctoral/Research Fellow, Mathematics Departments, Technion, Haifa, Israel.

2007-2008: Senior Research Fellow, Electrical Engineering and Mathematics Departments, Technion, Haifa, Israel.

Senior Lecturer – HIT - Holon Institute of Technology.

2005-2007: Andrew and Erna Finci Viterbi Post-doctoral Fellow, Electrical Engineering Department, Technion, Haifa, Israel.

1986-present: Lecturer/T.A. – Technion - Israel Institute of Technology, Haifa, Israel.

2001-2005: Lecturer – Ort Braude College, Karmiel, Israel.

1994-1997: Instructor – The Department of Pre-University Studies of the Technion.

Lecturer – The Open University, Israel

Lecturer – The Jezreel Valley College, Afula and Nazareth Illit, Israel

1983-1985: High School Teacher – Bucharest and Târgoviste, Romania

1999-2000: Supervising Teaching Assistant – Department of Mathematics, Technion, with responsibility over more than 100 Teaching Assistants.

2000-2001: Verification Engineer – GALILEO Technology Ltd. (Including Advanced Course at I.B.M. Research Labs, Haifa, Israel.)

SHORT ACADEMIC VISITS

University of Helsinki, September 1998.

IMA, University of Minneapolis, March 2006.

IGAT, EPFL, Lausanne, June 2006.

Freie Universität, Berlin, June 2006.

IGAT, EPFL, Lausanne, April 2007.

SUNY at Stony Brook, NY, September 2008 and April 2009.

OTHER PROFESSIONAL ACTIVITIES

Reviewer for Mathematical Reviews.

Referee for Pacific Journal of Mathematics.
Referee for Indian Journal of Mathematics/Bulletin of The Allahabad Mathematical Society.
Referee for Computer Aided Geometric Design.
Referee for International Journal of Computer Vision.
Referee for Journal of Mathematical Imaging and Vision.
Referee for Journal of Visual Communication and Image Representation.
Referee for Progress In Electromagnetics Research/Journal of Electromagnetic Waves and Applications.
Referee for Nexus Network Journal.
Referee for the 2nd and 3rd International Conference on Education and Information Systems, Technologies and Applications (EISTA 2004 and EISTA 2005).
Referee for Shape Modeling International - SMI06, Tohoku University, Sendai, Japan, June 14-16, 2006.
Referee for ICIP 2007, San Antonio, Texas, September 16-19, ICIP 2008, San Diego, California, October 12-15 and ICIP 2009, Cairo, Egypt, November 7-11.
Referee for CISP'09-BMEI'09, Tianjin, October 17-19, China, 2009.
Program Committee member, Anniversary 45 years Conference of the Department of Mathematics Bacău, Bacău, Romania, September 18-20, 2006.

5 LIST OF PUBLICATIONS

1. A. Books and Chapters in Books

(1) *Curvature – Smooth, Piecewise-Linear and Metric*, in *What is Geometry?*, Advanced Studies in Mathematics and Logic, 237-268, Polimetrica, Milano, 2006.

- (2) *Exercises and Problems in Complex Functions Theory* (in Hebrew), 163 pages, Technion, Haifa, Israel. (<http://www.math.technion.ac.il/courses> – look for Course Number 104215 (Complex Functions).)
- (3) *A Problem Book in Topology*, with Dan Guralnik, (in Hebrew), 225 pages, Technion, Haifa, Israel. (<http://www.math.technion.ac.il/courses> – look for Course Number 104142 (Introduction to Topology).)

2. Journals and Conference Proceedings

A. Mathematics

- (1) *Note on a Theorem of Munkres*, *Mediterranean Journal of Mathematics*, vol. 2, no. 2(2005), 215-229.
- (2) *The Existence of Quasimeromorphic Mappings*, *Annales Academiæ Scientiarum Fennicæ Mathematica*, Vol. 31, 2006, 131-142.
- (3) *The Existence of Quasimeromorphic Mappings in Dimension 3*, *Conform. Geom. Dyn.* **10** (2006), 21-40.
- (4) *The Existence of Automorphic Quasimeromorphic Mappings and a Related Problem*, *Revue Roumaine de Math. Pures et Appl.*, vol 51, no. 5-6, 2006, 759-766.
- (5) *Remarks on the Existence of Quasimeromorphic Mappings*, *Contemporary Mathematics CONM/455*, 2008, 325-331.
- (6) *The existence of thick triangulations – an “elementary” proof*, with Meir Katchalski, *The Open Mathematics Journal*, **2**, 8-11, 2009.
- (7) *Intrinsic Differential Geometry and the Existence of Quasimeromorphic Mappings*, *Revue Roumaine de Math. Pures et Appl.*, **54**,

5-6, 565-574, 2009.

B. Theoretical Computer Science/Applied Mathematics

(1) *Curvature Based Clustering for DNA Microarray Data Analysis*, with Eli Appleboim, Lecture Notes in Computer Science, IbPRIA 2005, **3523**, pp. 405-412, Springer-Verlag, 2005.

(2) *Minimal-Distortion Mappings of Surfaces for Medical Imaging*, with Eli Appleboim and Yehoshua Y. Zeevi, Proceedings of VISAPP 2006 – International Conference on Computer Vision Theory and Applications, Setubal, Portugal, 25 - 28 February, 2006.

(3) *Quasi-Isometric and Quasi-Conformal Development of Triangulated Surfaces for Computerized Tomography*, with Eli Appleboim, Ofir Zeitoun and Yehoshua Y. Zeevi, Lecture Notes in Computer Science, IWCI 2006, **4040**, pp. 361-374, Springer-Verlag, 2006.

(4) *Two-Dimensional Sampling and Representation of Folded Surfaces Embedded in Higher Dimensional Manifolds*, with Eli Appleboim and Yehoshua Y. Zeevi, Proceedings of EUSIPCO 2006 – European Signal Processing Conference, Florence.

(5) *Quasi-Conformal Flat Representation of Triangulated Surfaces for Computerized Tomography*, with Eli Appleboim and Yehoshua Y. Zeevi, Lecture Notes in Computer Science, CVAMIA 2006, **4241**, pp. 155-165, Springer-Verlag, 2006.

(6) *Digital Version Of Green's Theorem and its Application to the Coverage Problem in Formal Verification*, with Eli Appleboim, Stud.Cercet.Stiint., Ser.Mat., 16 (2006), Supplement Proceedings of ICMI 45, Bacau, Sept.18-20, 2006, pp. 539-554.

(7) *Geometric Sampling of Manifolds for Image Representation*

and Processing, with Eli Appleboim and Yehoshua Y. Zeevi, *SSVM 2007, Lecture Notes in Computer Science*, **4485**, pp. 907-918, Springer-Verlag, 2007.

(8) *Curvature Estimation over Smooth Polygonal Meshes using The Half Tube Formula*, with Gershon Elber and Ronen Lev, *Lecture Notes in Computer Science, Mathematics of Surfaces: 12th IMA International Conference*, **4647**, pp. 275-289, Springer-Verlag, 2007.

(9) *Image Projection and Representation on S^n* , with Eli Appleboim and Yehoshua Y. Zeevi, *Journal of Fourier Analysis and Applications, Special Issue – “Analysis on the Sphere II”* **13**(6), 2007, 711-727.

(10) *Sampling and Reconstruction of Surfaces and Higher Dimensional Manifolds*, with Eli Appleboim and Yehoshua Y. Zeevi, *Journal of Mathematical Imaging and Vision*, **30**(1), 2008, 105-123.

(11) *Geometric Sampling for Signals with Applications to Images*, with Eli Appleboim and Yehoshua Y. Zeevi, *Proceedings of SampTA 07 – Sampling Theory and Applications*, pp. 1-6, 2008.

(12) *Local versus Global in Quasiconformal Mapping for Medical Imaging*, with Eli Appleboim, Efrat Barak, Ronen Lev and Yehoshua Y. Zeevi, *Journal of Mathematical Imaging and Vision*, **32**(3), 293-311, 2008.

(13) *Combinatorial Ricci Curvature for Image Processing*, with Eli Appleboim, Gershon Wolansky and Yehoshua Y. Zeevi, presented at MICCAI 2008 Workshop “Manifolds in Medical Imaging: Metrics, Learning and Beyond”, published in *Midas Journal* (electronic journal – <http://hdl.handle.net/10380/1500>).

(14) *Geometric Sampling of Images, Vector Quantization and Zador’s*

Theorem, with Eli Appleboim and Yehoshua Y. Zeevi, to appear in Proceedings of SampTA 2009.

(15) *Geometric Wavelets for Image Processing: Metric Curvature of Wavelets*, with Chen Sagiv and Eli Appleboim, Proceedings of SampTA 2009.

(16) *Geometric Reproducing Kernels for Signal Reconstruction*, with Eli Appleboim and Yehoshua Y. Zeevi, Proceedings of SampTA 2009.

(17) *Metric Methods in Surface Triangulation*, with Eli Appleboim, IMA Conference "Mathematics of Surfaces XIII", Lecture Notes in Computer Science, **5654**, 335-355, 2009.

(18) *Combinatorial Ricci Curvature and Laplacians for Image Processing*, with Eli Appleboim, Gershon Wolansky and Yehoshua Y. Zeevi, Proceedings of CISP'09, Vol. 2, 992-997.

(19) *Quasi-conformal Mapping for Medical Imaging - Some New Directions*, accepted at ICMB2010.

C. Educational Aspects of Mathematics and Computer Science

(1) *Euler's Theorem as the Path Towards Mathematics*, Nexus Network Journal – Special issue dedicated to didactics (Teaching Mathematics to Architects), vol. 7, no. 1, pp. 111-119 (Spring 2005).

(2) *A Place for Differential Geometry?*, in Proceedings of The 4th International Colloquium on the Didactics of Mathematics, Vol II, pp. 267-276, 2005.

(3) *Instructor Immediacy in Synchronous e-Learning Environments*, with Peter Soreanu, in Proceedings of World Conference on Educational Multimedia, Hypermedia and Telecommunications 2004 pp.

3001-3005. Norfolk, VA: AACE.

(4) *Semi-Continuous Monitoring of Student Feedback in Interactive Synchronous E-Learning Environments*, with Peter Soreanu, in Proceedings of Third IEEE International Conference on Advanced Learning Technologies (ICALT'03), p. 276-277, 2003.

3. Submitted

(1) *Curvature based triangulation of metric measure spaces*, preprint (arXiv:1002.0007v1 [math.DG]).

(2) *Geometric Approach to Sampling and Communication*, with Eli Appleboim and Yehoshua Y. Zeevi (see also arXiv:1002.2959v1).

(3) *Isometric Embeddings in Imaging and Vision: Facts and Fiction*, (See also: arXiv:1004.5351v2 [cs.CV]).

(4) *Geometric Sampling of Infinite Dimensional Signals*.

4. Preprints/Technical Reports

(1) *Sampling and Reconstruction of Surfaces and Higher Dimensional Manifolds*, with Eli Appleboim and Yehoshua Y. Zeevi, Technion CCIT Report #591, June 2006 (EE PUB #1543 June 2006).

(2) *Surface triangulation - the metric approach*, preprint (arxiv:cs.GR/0401023).

(3) *Local versus Global in Quasiconformal Mapping for Medical Imaging*, with Eli Appleboim, Efrat Barak, Ronen Lev and Yehoshua Y. Zeevi, Technion CCIT Report #621 (EE Pub. #1578 May 2007).

(4) *Sparse sampling of manifolds*, with Eli Appleboim and Yehoshua Y. Zeevi.

- (5) *On the classical – and not so classical – Shannon Sampling Theorem*, with Eli Appleboim, Dirk A. Lorenz and Yehoshua Y. Zeevi, Technion CCIT Report #680 (EE Pub. #1637 January 2008).
- (6) *Geometric Approach to Sampling and Communication*, with Eli Appleboim and Yehoshua Y. Zeevi, Technion CCIT Report #707 (EE Pub. # 1664 November 2008).
- (7) *Combinatorial Ricci Curvature and Laplacians for Image Processing*, with Eli Appleboim, Gershon Wolansky and Yehoshua Y. Zeevi, CCIT Report #722 March 2009 (EE Pub. No. 1679) (also arXiv:0903.3676).
- (8) *Geometric Image Sampling, Reconstruction and Quantization*, with Eli Appleboim and Yehoshua Y. Zeevi.
- (9) *Normal Approximations of Geodesics on Smooth Triangulated Surfaces*, with Eli Appleboim and Jonathan Stern, CCIT Report #722, August 2009.
- (10) *Generalized Laplacians and Curvatures for Image Analysis and Processing*, with Eli Appleboim, Gershon Wolansky and Yehoshua Y. Zeevi, preprint.

C. Conference Talks

[1] Mathematics

- (1) *On the Existence of Quasiregular Mappings* was presented at the International Workshop on Quasiregular Mappings, May, 1999, Technion, Haifa, Israel.
- (2) *The Existence of Automorphic Quasimeromorphic Mappings*, presented at the International Conference on Complex Analysis and Related Topics,

The Xth Romanian-Finnish Seminar, August 14-19, 2005, Cluj-Napoca, Romania.

(3) *The Existence of Quasimeromorphic Mappings*, presented at the Third International Conference on Complex Analysis & Dynamical Systems, January 2-6, 2006, Nahariya, Israel.

(4) *On the existence of quasimeromorphic mappings*, presented at The Annual Conference of the Israel Mathematical Union, Neve Ilan, May 25-26, 2006.

(5) Program Committee member and invited talk, at Anniversary 45 years Conference of the Department of Mathematics Bacau, Bacau, Romania, September 18-20, 2006.

(6) *A metric curvature and some of its applications*, with Eli Appleboim and Yehoshua Y. Zeevi, accepted at Quantum Graphs, their Spectra and Applications (An Isaac Newton Institute Workshop), Cambridge, Great Britain, April 2-5, 2007, (poster session).

(7) *Haantjes-Finsler Curvature for Weighted Graphs and Applications*, with Eli Appleboim, presented at Seventh Haifa Workshop on Interdisciplinary Applications of Graph Theory, Combinatorics and Algorithms, May 14-16, 2007.

(8) *Curvatures, Branched Coverings and Wheeler Foam*, invited talk, presented at The Annual Conference of the Israel Mathematical Union, Beer Sheva, May 18-19, 2007.

(9) *Triangulations, Quasiregular Mappings and Differential Geometry*, abstract accepted at 6-th Congress of Romanian Mathematicians, June 28 - July 4, 2007, Bucharest, Romania.

(10) *Quasiregular Mappings and PL Differential Geometry*, presented at International Conference on Complex Analysis and Related Topics – The 11th Romanian-Finnish Seminar, August 14-19, 2008, Alba Iulia, Romania.

(11) *Triangulations, quasiregular mappings and differential geometry*, presented at Complex Analysis & Dynamical Systems IV, May 18-22, Nahariya,

Israel.

[2] **Applied Mathematics/Theoretical Computer Science**

(1) *Curvature Estimation over Smooth Polygonal Meshes using The Half Tube Formula*, with Gershon Elber and Ronen Lev, presented at The Third TAU/Technion Workshop on Geometric Computing, Nachsholim, Israel, 21 May, 2004.

(2) *Curvature Based Clustering for DNA Microarray Data Analysis*, with Eli Appleboim, IbPRIA 2005 – 2nd Iberian Conference on Pattern Recognition and Image Analysis, June 7-9, 2005; Estoril, Portugal.*¹

(3) *Metric Curvatures and Applications*, with Eli Appleboim and Yehoshua Y. Zeevi, presented at IMA Workshop “Shape Spaces”, 3-7 April, Minneapolis, USA (poster session).

(4) *Minimal Distorting Flattening in Brain Imaging*, with Eli Appleboim, Ofir Zeitoun and Yehoshua Y. Zeevi, accepted at HBM2006 Florence, Italy (poster session).

(5) *Quasi-Isometric and Quasi-Conformal Development of Triangulated Surfaces for Computerized Tomography*, with Eli Appleboim, Ofir Zeitoun and Yehoshua Y. Zeevi, presented at International Workshop on Combinatorial Image Analysis 2006, Berlin.

(6) *Quasi-Conformal Flat Representation of Triangulated Surfaces for Computerized Tomography*, with Eli Appleboim and Yehoshua Y. Zeevi, accepted at CVAMIA 2006, Gratz, Austria (poster session).

(7) *Two-Dimensional Sampling and Representation of Folded Surfaces Embedded in Higher Dimensional Manifolds*, with Eli Appleboim and Yehoshua Y. Zeevi, accepted at EUSIPCO 2006, Florence.

(8) *Two-Dimensional Representation of Folded Surfaces Embedded in Higher Dimensional Manifolds*, with Eli Appleboim and Yehoshua Y. Zeevi, accepted

¹ “*” – Presented by a coauthor

at ICIP 2006, Atlanta (poster session).

(9) *Quasi-isometric and quasi-conformal development of triangulated surfaces for computerized tomography*, presented at The Annual Conference of the Israel Mathematical Union, Neve Ilan, May 25-26, 2006.

(10) *What Conformal Mappings for Image Processing?*, invited talk, presented at Applied Harmonic Analysis Workshop, Ort Braude College, 3 May, 2007.

(11) *Geometric Sampling of Manifolds for Image Representation and Processing*, with Eli Appleboim and Yehoshua Y. Zeevi, presented at First International Conference on Scale Space Methods and Variational Methods in Computer Vision (SSVM), Ischia, May 30-June 2, 2007.

(12) *Sampling and Reconstruction of Manifolds*, with Eli Appleboim and Yehoshua Y. Zeevi, presented at SampTA 07, Thessaloniki, 1-5 June, 2007.*

(13) *Towards a Shannon's Sampling Theorem for Images*, invited talk, presented at Sixth Negev Workshop on Applied Mathematics, Sede-Boker, July 1-5, 2007.

(14) *Curvature Estimation over Smooth Polygonal Meshes using The Half Tube Formula*, presented at Mathematics of Surfaces: 12th IMA International Conference, Sheffield, September 4-6, 2007.

(15) *Combinatorial Ricci Curvature for Image Processing*, with Eli Appleboim, Gershon Wolanski and Yehoshua Y. Zeevi, presented at MICCAI 2008 Workshop "Manifolds in Medical Imaging: Metrics, Learning and Beyond", September 10, 2008, New York.

(16) *Geometric Approach to Sampling and Communication*, with Eli Appleboim and Yehoshua Y. Zeevi, presented at German-Israel Workshop for Vision and Image Sciences 2008 Haifa, November 4-6, 2008.

(17) *Normal curves and semi-discrete curvature flow*, with Eli Appleboim and Gershon Wolanski, presented at German-Israel Workshop for Vision and Image Sciences 2008 Haifa, November 4-6, 2008.*

(18) *Geometric Sampling of Images, Vector Quantization and Zador's Theorem*, presented at SampTA 2009, Marseille May 18-22, 2009.*

(19) *Geometric Wavelets for Image Processing: Metric Curvature of Wavelets*, presented at SampTA 2009, Marseille May 18-22, 2009.*

(20) *Geometric Reproducing Kernels for Signal Reconstruction*, presented at SampTA 2009, Marseille May 18-22, 2009.*

(21) *Metric Methods in Surface Triangulation*, presented at IMA Conference "Mathematics of Surfaces XIII", York, September 7-9, 2009.

[3] **Educational Aspects of Mathematics and Computer Science**

(1) *Geometry as Epistemology* presented at 2nd International Conference on the Teaching of Mathematics, Crete, Greece, July 2002.

(2) *A Place for Differential Geometry?*, presented at The 4th Colloquium on the Didactics of Mathematics, April 22-23, 2005, Rethymnon, Crete, Greece.

(3) *Semi-Continuous Monitoring of Student Feedback in Interactive Synchronous E- Learning Environments*, with Peter Soreanu, presented at INCALT-2003, July 9-11, 2003, Athens, Greece.*

(4) *Instructor Immediacy in Synchronous e-Learning Environments*, with Peter Soreanu, presented at INCALT-2004, Lugano, Italy.*

(5) *Mathematical Notation - Between Scylla and Charybdis*, with Adriana Marafon, abstract accepted at 3rd International Conference on the Teaching of Mathematics, June 30 - July 5, 2006, Istanbul, Turkey.

(6) *Foldings - From Automata to Architecture*, with Eli Appleboim and Peter Soreanu, abstract accepted at 3rd International Conference on the Teaching of Mathematics, June 30 - July 5, 2006, Istanbul, Turkey.

(7) *The Myhill-Nerode Theorem - from Automata to Formal Verification*, with Peter Soreanu, abstract accepted at GCETE'2005 - Global Congress on

Engineering and Technology Education, March 13-16, 2005, Bertioga, Brazil.

G. Seminar Talks/Invited Talks

- (1) *Kleinian Groups* – Department of Mathematics, Technion, 1989.
- (2) *The Geometry of Kleinian Groups* – Department of Mathematics, Technion.
- (3) *Triangulating Teichmüller Space, I, II, III* – in the frame of the Geometry and Topology Seminar (joint to the Technion and the Haifa University), January 2001.
- (4) *On the Existence of Quasimeromorphic Mappings* – Ort Braude College 2001.
- (5) *An Introduction to Automatic Groups* – Ort Braude College 2002.
- (6) *Exploring Curvature – Continuous and Discrete* – Computer Science Department, Technion, CGGC Seminar (14.01.2004.)
- (7) *Exploring Curvature – The Metric Approach* – Computer Science Department, Technion, CGGC Seminar (21.01.2004.)
- (8) *Can one see the shape of a network? – Geometric Viewpoint of Information Flow*, joint work with Eli Appleboim, – Ort Braude College (21.6.2004.) Holon Academic Institute of Technology (06.2004.)
- (9) *Curvature – the Metric Approach* – Approximation Seminar, Tel-Aviv University (7.6.2005.)
- (10) *What is Curvature?* – The Mathematical Club, Department of Mathematics, Technion (25.1.2006.)
- (11) *A Place for Differential Geometry?* – Holon Academic Institute of Technology (1.1.2006.)
- (12) *On Sampling and Representation of Manifolds* – Applied Mathematics Seminar, Technion (30.5.2006.)
- (13) *The Existence of Quasiregular Mappings and Some Applications* – École Polytechnique Fédérale, Lausanne (13.6.2006.)

- (14) *On Metric Curvatures and Their Applications* – Freie Universität, Berlin (16.6.2006.)
- (15) *A Metric Curvature and Some of its Applications* – École Polytechnique Fédérale, Lausanne (26.4.2007.)
- (16) *Geometric Branched Covers - a brief survey* – Colloquium of Department of Mathematics, University of Haifa (29.05.1007.)
- (17) *A Metric Curvature for Weighted Graphs and Some of its Applications* – Geometry, Functional Analysis and Probability Seminar, Weizmann Institute (20.06.2007.)
- (18) *Surface flattening - from local to global* – Approximation Seminar, Tel-Aviv University (24.06.2007.)
- (19) *Can One See the Shape of a Network?* – ClubNet, Electrical Engineering Department, Technion (27.06.2007.)
- (20) *One the classical – and not so classical – Shannon Sampling Theorem* – Mathematics Colloquium, Bar-Ilan University (23.12.2007.)
- (21) *Nash, Burago and Image Processing* – Topology and Geometry Seminar, Haifa University (28.02.2008.)
- (22) *One the classical – and not so classical – Shannon Sampling Theorem* – Approximation Seminar, Tel-Aviv University (20.3.2008.)
- (23) *Curvature – the Metric Approach* – Computer Science Department, SUNY at Stony Brook (04.09.2008.)
- (24) *Surface flattening – from local to global* – Computer Science Department, SUNY at Stony Brook (11.09.2008.)
- (25) *The Yin and Yang of Electronics: Remarks on the dialectics of an Electronics Course* – Department of Education in Technology and Science, Technion (5.5.2009.)
- (26) *Combinatorial Ricci Curvature and Laplacians for Image Processing* – PDE and Applied Mathematics Seminar, Department of Mathematics, Technion (3.6.2009.)

(27) *Generalized Laplacians and Curvatures for Image Analysis and Processing* – Approximation Seminar, Tel-Aviv University (15.4.2010.)

(28) *Nash, Burago & Zalgaller and Image Processing* – The Computer Vision Seminar, Computer Science and Engineering School, Hebrew University, Jerusalem (2.5.2010.), and “The Pixel Club”, Technion (1.6.2010.)

(29) *The Geometry of Metric Measure Spaces* – Seminar, Department of Mathematics, Technion (Fall Semester, 2009–2010.)

In addition to the talks mentioned above, a number of other talks were given in the frame of the Geometry and Topology Seminar (joint to the Technion and the Haifa University).

6 TEACHING EXPERIENCE

Department of Mathematics, Technion

Lecturer: in *Differential Geometry, Geometry, Foundations of Geometry, Calculus 2m, Modern Algebra, Complex Analysis, Mathematics for Architects, Mathematics for Life Sciences* and *Mathematics for Social Sciences 1,2* (graduate courses), *Mathematics Seminar for System Engineering* (graduate course).

Teaching Assistant: *Foundations of Geometry, Differential Geometry, Geometry and Topology, Combinatorics, Modern Analysis for Electrical Engineers* (graduate course) and all the basic courses in Analysis and Algebra.

Instructor (1997-1999): at the “Scitech” – The International Summer

School for High-school students at the Technion.

Electrical Engineering Department, Technion

Project Advisor: About 20 supervised projects.

Haifa University

Lecturer: *Signal Analysis – Foundations and Applications* (graduate course).

Ort Braude College, Karmiel, Software Engineering and Mathematics Departments

Lecturer: *Formal Verification of Software and Hardware, Automata and Formal Languages, OOPS, Algorithms in Discrete Geometry, Discrete Mathematics 2, Bio-Geometric Modelling, Computation Theory* and all the basic courses in Mathematics.

Final Project Advisor: 23 supervised projects.

The Open University

Introduction to Mathematics, Linear Algebra, Calculus II, Mathematics for Graduate Students in Business Management.

H.I.T. - Holon Institute of Technology

Calculus 1, Image Processing, Pattern Recognition, Wavelets.

Instructor (1984): at the Winter Student Training Camp for the Mathematics Olympics.