MARTHA TAKANE IMAY

0. PERSONAL DATA
Nationality: mexican.
Married.
email: takane@matem.unam.mx

1. EDUCATION:
1.1. B.S. in Mathematics, Universidad Nacional Autónoma de México (UNAM), 1986.

1.2. M.S. in Mathematics, UNAM, 1988.

1.3. Ph.D. in Mathematics, UNAM, 1992.

1.4. POSDOCTORAL POSITIONS:

1.4.1. Department of Mathematics, University of Bielefeld, from october 92 to september 93.

1.4.2. Department of Mathematics, University of Trondheim, october 93 to april 94.

2. AREA OF SPECIALIZATION:
Linear Algebra (Theory of cones, Matrix theory, Theory of Matroids).
Algebra (Representation theory of Algebras).
Algebraic Graph Theory.

3. ACADEMICAL POSITIONS:
i). Teaching assistant in the School of Sciences, UNAM, from 26th november, 1984 to october 1990.

ii). Teacher in the School of Sciences, UNAM, since october, 1991.

iii). Researcher, Instituto de Matemáticas, UNAM, since march, 1992.

iv) Teacher in the School of Sciences, UAEM, since 2006.

OTHER ACTIVITIES:
1. Managing editor of Aportaciones Matemáticas, of the Mexican Mathematical Society, june-1994 to 2005.

2. Coordinator of the Publishing department of the Instituto de Matemáticas, UNAM, from 1st july, 1994 to june, 1997.

3. Editor of Miscelánea Matemática, SMM, from april 1998 to april 2000.

4. Organizer of the Colloquium of the Institute of Mathematics UNAM (Cuernavaca) from october 2007 to december 2009.

5. Coordinator of the "Update courses" of the Institute of Mathematics UNAM (Cuernavaca) from 2011.

6. Design of the Program of the course of Algebra and its Applications for the "Update courses" UNAM 2011.

4. TEACHING EXPERIENCE ABROAD:
4.1. Organizer of the Summersemester 1993, in the Representation theory of Algebras, University of Bielefeld, Germany.

5. REASERCH VISITINGS:
5.1. Institute of Mathematics, Tsukuba University, Japan, 1st september to 7th december,1990.

5.2. Institute of Mathematics, Unniversity Nicholas Copernicus Poland, 11th may to 8th june, 1991.

5.3. Department of Mathematics, University of Bielefeld, Germany, 1st october 1992 to september, 1993.

5.4. Institute of Matematics, University Nicholas Copernicus, Poland, 18 - 30th january, 1993.

5.5. University Trondheim, Norway, 15th october, 1993 to 15th april, 1994.

5.6. School of Mathematics, University of Bielefeld, Germany, september,1994.

5.7. University of Sherbrooke, Canada, from 27th january to 24th february,1995.

5.8. Institute of Mathematics, University of Tsukuba, Japan, 10th march to 12th june, 1995.

5.9. Department of Mathematics, University of Bielefeld, Germany, 25th june to 25th july, 1995.

5.10. Department of Mathematics, University of Bielefeld, Germany, 1st to 31th july, 1996.

5.11. University of Agriculture and Technology, Tokyo, Japan, october 1997.

5.12. University of Sao Paulo, Sao Paulo, Brazil, 9th june to 7th july, 1998.

5.13. University of Madison, Wisconsin, EU, september, 1999.

5.14. University of Madison, Wisconsin, EU, april, 2000.

5.15. Tokyo Metropolitan University, Japan, may 2005-march 2006.

5.16. University of California in Davis, EU, august 2013-january 2014.

6. RESEARCH PAPERS.

[1] * "Spectral properties of Coxeter transformations and applications".(Coauthor: J.A. de la Peña). Archiv der Math., vol.55, (1990), 120-134.

[2] * "The Spectral Radius of the Galois covering of a finite graph".(coauthor: J.A. de la Peña). Linear Algebra and its Applications, 160, (1992), 175-188.

[3] * "The Theorem of Philip Hall for vector spaces".(coauthors: J.L. Arocha y B. Llano). Anales del Instituto de Matemáticas, UNAM Vol. 32 (1992), 1-8.

[4] * "Some bounds for the spectral radius of a Coxeter transformation".(coauthor: J.A. de la Peña). Tsukuba Journal of Math.,17, (1993), 193-200.

[5] * "On the Coxeter transformation of a wild algebra". Archiv der Math, 63, (1994), 128-135.

[6] * "The spectral classes of the unicyclic graphs". (coauthor: A. Boldt). J. of Pure and Applied Algebra, vol. 133, 39-49 (1998).

[7] * "Mono orbits, epi orbits and elementary vertices of wild quivers".(coauthor: O. Kerner). Communications in Algebra vol. 25 (1), (1997), 51-77.

[8] * "The complement of the preprojective almost complete partial tilting modules". (coauthor: O. Kerner). Representation theory of Algebras, CMS Conference Proceedings AMS, vol. 18, 373-382 (1996).

[9] * "The Coxeter transformations of representation infinite quivers". Representation theory of Algeras and related topics, CMS Conference Proceedings AMS, vol. 19, 349-372 (1996).

[10] * "Constructing the directing components of an algebra" (coauthor: J. A. de la Peña). Colloquia Mathematicae 74 (1)(1997) 29-46.

[11] * "The number of terms in the middle of the almost split sequences over tame algebras".(coauthor: J. A. de la Peña). Transactions AMS, 351 (9) (1999) 3857-3868.

[12] * "Koszul generalized Auslander regular algebras". (coauthores: J. Y. Guo and R. Martínez Villa). CMS Conference Proceedings, vol. 24, 263-283 (1998).

[13] * "Universal Filtrations for Modules in Perpendicular Categories".(coauthor: O. Kerner). CMS Conference Proceedings, vol.24, 347-364 (1998).

[14] * "Some remarks on irreducible and strongly irreducible operators".(Coautor: B. Zavala). Aportaciones Matemáticas, Serie Comunicaciones 27, 91-100 (2000).

[15] * "Equilibria of Pairs of Nonlinear Maps Associated with Cones".(Coautores: G.P. Barker, M. Neumann-Coto, H. Schneider, B. Tam). Integral Equations and Operator Theory, 51 (2005), $357 - 373$.

[16] "Evaluation of the optic nerve cupping by ultrasound comparing with HRT" (coauthors. Mariana Takane(main author), M. Neumann-Coto, K. Wilson, G. Islas). Siduo, Lima Perú 2006.

[17] * "Random iterations of a wreath product".(coauthor: L. Gorostiza). Statistics and Probability Letters, vol.78, 21-26, 2008.

[18] * "Cones and convex bodies with Modular Lattices of Faces".(coauthors: D. Labardini-Fragoso and Max Neumann-Coto). Proceedings AMS vol.140 No.12 4337-4350pp (2012).

[19] * "$\mathbb{Z}_2-$Algebras in the Boolean Function Irreducible Decomposition" (coauthor: F. Zertuche). J. Mathematical Physics 55, 1-18pp (2012).

[20] "Methods to construct the Sparse-paving Matroids over a Finite Set". (in progress). (Coauthors: B. Mederos, G. Tapia-Sánchez, and B. Zavala) (2017).

Papers in Journals with referee.

GENDER EQUITY ACTIVITIES.

[G1] Co-author of the **Science, Technology and Innovation Project for the new academical center**: Centro de Investigación y Estudios de Género. (UNAM) (Approved by the Consejo Universitario, november 2016).

[G2] Co-organization of the Workshop "Superando la Inequidad: Acciones para impulsar y reconocer las investigacones de ciencia y género en México) (FCCyT,2016)

[G3] Co-editor of the Memoirs of the Workshop "Superando la Inequidad: Acciones para impulsar y reconocer las investigacones de ciencia y género en México) (FCCyT,2016).

[G4] Member of the group Mujer-Ciencia-UNAM (since 2015).

[G5] Co-organizer of the HeForShe-day in UNAM (Instituto de Matemáticas, UNAM 1st september, 2016)

[G6] Coordinator of the roundtable "Gender-Equity actions which had success and propositive activities" (Celebrating the Women´s day, march 2017) Instituto de Matemáticas, UNAM.

[G7] Paper: "Actions of the group "Mujer y Ciencia, UNAM" (Women and Science, UNAM) to the inclusion of the Gender Perspective in the Science, Tec-

nology and Innovation Laws in Mexico". (Coauthors: E.M. Pérez Armendariz, Lena Ruíz Azuara, M. Valdés Ramírez, M. Rosado Solís, G. del Valle, M.A. Pérez Armendariz, M. Feingold and I. Meza) (2016).

[**G8**] Participant of the roundtable: "Gender and Mathematics". IV. Encuentro SUMEN. Las Matemáticas en las Ciencias, las Humanidades y las Artes. CU, UNAM. (16th june 2017).

[**G9**] Summerworkshop "Including language", El Colegio de México, (5-8 june 2017).

[**G10**] Diploma course in Gender Studies. (august 2017-february 2018).

EXPOSITORY PAPERS

[E1] * "Conos en teoría de Representaciones de álgebras". (Cones in Representation theory of Algebras). Memorias del XXI Congreso Nacional de la Sociedad Matemática Mexicana. Aportaciones Matemáticas 6 (1989), 157-174.

[E2] "Repetitive Algebras", Proceedings of the Summer School (Representation Theory, Pappenheim, 1994): Derivierte Äquivalenzen. Sonderforschungsbereich 343, Diskrete Strukturen in der Mathematik. Ergänzungsreihe 95-007. Universität Bielefeld.

ARTICLES IN NEWSPAPERS.

[P1] "Llegó la Feria". (Coauthor M. Neumann-Coto). Jornada. Un dos tres por mi. June 2001. (Mathematics for children).

7. AWARDS

7.1. Fellowship of the Japan Association for Mathematical Sciences to attend the Congress of Mathematicians 1990 in Kyoto, Japan.

7.2. Gabino Barreda prize to PhD. students.

7.3. Weizmann prize to the best PhD. thesis in exact Sciences in Mexico, 1992.

7.4. Regular member of the Mexican Academy of Sciences, since april 1998.

7.5. Member of the Prize´s comission of the "Premio Sotero Prieto", SMM, from november 1996 to october 1999.

7.6. Member of the Prizes' comission of the Mexican Academy of Sciences, from april 2004 to may 2005.

7.7. Sor Juana Inés de la Cruz prize 2007 (UNAM).

7.8. UACJ "Takane-Tapia 2006-2009-Generation" of the School of Mathematics.

7.9. Fellowship of the NANUM, Korea (2014).

7.10. CAACFMI by election and member of CAB

8. BACHELOR STUDENTS-THESIS ADVISOR.

8.1. Pablo Brena Z. (co-advisor, J. A. de la Peña): The spectral radius of the Galois coverings of graphs. Spanish. (september 1995).

Honorific Mention of the Sotero Prieto Prize to the best Bachelor thesis in Mathematics 1996.

8.2. Israel Molina Lara: Quadratic forms and roots. Spanish. (May 1997).

8.3. Berta Zavala Santana: Spectral theory of operators which leave invariant cones. Spanish. (february 1999).

8.4. Dalia Sigler Hernández (co-advisor: M. Neumann-Coto): An application from Knot theory to algebraic theory of graphs. Spanish. (December 2002).

8.5. Daniel Labardini Fragoso: The face lattice of a finite dimensional cone. Spanish.(May 2004).

Honorific Mention. Faculty of Sciences, UNAM.

Sotero Prieto prize to the Best Bachelor Thesis of 2004. S.M.M. (11th october 04).

8.6. Marina Durán Orozco (co-advisor.: G. Tapia): Algebraic construction of invariant polyhedral cones. Spanish (23th May 09) UACJ.

8.7. Vanessa Alderete Acosta (co-advisor: G. Tapia). An Introduction to the Representation Theory of Quiver-Algebras. Spanish (28th November 09) UACJ.

8.8. Rosa Hidalgo Avalos (co-advisor: G. Tapia). Aplications of the Perron-Frobenius Theorem Spanish (28th November 09) UACJ.

8.9. Sonia Azeneth Olvera López (co-advisor: G. Tapia): On the Geometry of Max and Min-algebras. Spanish (28th November 09) UACJ.

8.10. Daniel Antonio Martínez (co-advisor: G. Tapia). Galois coverings of graphs: spectral properties and the Universal covering. Spanish UACJ. (5th march 15).

8.11. Juan Manuel Bobadilla. (ao-advisor: B. Mederos) Characterization and counting of sparse-paving matroids of graphs. Spanish UACJ. (4 december 2015).

8.12. Iván Leonardo Pérez Cabrera (co-advisor: L. Núñez Betancourt): Max Algebras. Algebraic and Geometric Properties. Spanish CIMAT. (12th May 17).

8.13. Edgar Jesús Vázquez Alonso (co-advisor: G. Tapia): Representation Theory of Algebras: An experiment from finite representation case to a tame case. Spanish UACJ (22nd May 17).

9. GRADUATED STUDENTS

9.1. Berta Zavala Santana, UNAM, General exams and the article * "Some remarks on irreducible and strongly irreducible operators".(M. Takane and B. Zavala). Aportaciones Matemáticas, Serie Comunicaciones 27, 91-100 (2000).

9.2. José Luis Figueroa González. General exams and tesina "A characterization of the lattice of Paving and Paving Sparse Matroids". Fac. Ciencias UNAM.

10. OTHER ACTIVITIES:

10.1. Workshop of the International Conference in Representation theory of algebras VII. Mexico. (1994).

Lecture: The Coxeter transformations of wild algebras.

10.2. II joint meeting AMS-SMM, Mexico. (1995).

Lecture: The Coxeter transformations of algebras.

10.3. Workshop on Tame algebras, Representations and Deformations. 1996, CIRM Luminy, France. (1996).

Lecture: On the number of terms in the middle of the almost split sequences.

10.4. XXIX Congreso Nacional de la Sociedad Matemática Mexicana Universidad Autónoma de San Luis Potosí, México. (1996).

Coordinator of the algebra session.

10.5. III Joint meeting AMS-SMM. Mexico. (1997).

Coordinator of the Representation theory of algebras and groups.

10.6. III Joint meeting AMS-SMM. December 3rd to 6th, 97. Oaxaca, Oaxaca, Mexico.

Coordinator of the Representation theory of algebras and groups.

10.7. XXXVI Congreso Nacional de la Sociedad Matemática Mexicana. October 12th to 17th, 2003. Universidad Autónoma del Estado de Hidalgo, México.

Lecture: Cones, cones and more about cones.

10.8. XXXIX Congreso Nacional de la Sociedad Matemática Mexicana. October 5th, 2006. Universidad Juárez Autónoma de Tabasco, Villahermosa Tabasco, México.

Lecture: ¿Qué hacer en caso de una epidemia? Una solución de algebrista.

10.9. Co-organizer of Emalca 2007 (Escuela de Matemáticas de América Latina y el Caribe), 2-14th july 2007, Instituto de Matemáticas UNAM, Cuernavaca.

10.10. Co-organizer of the 15th ILAS Conference (Internacional Linear Álgebra Society Conference 2008). Cancún México, 16-20th june 2008.

10.11. Member of the Fellowships-Committee, Instituto de Matemáticas, UNAM (Cuernavaca). August 06- august 08.

10.12. Invited talk: "Equilibrium theorems of Perron-Frobenius type". ITAM nov 8th 2008.

10.13. Organizer: Algebra´s Day. Instituto de Matemáticas UNAM, U. Cuernavaca. 3-december-08.

10.14. Universidad Autónoma de Cd. Juárez (IIT. Departamento Ciencias Básicas Exactas).

III Jornadas de Física y Matemáticas.

Lecture: Irreducible operators on cones. 22th april 2009.

10.15. Universidad Autónoma de Cd. Juárez (IIT. Departamento Ciencias Básicas Exactas).III Jornadas de Física y Matemáticas. Course: Theory of matrices and its applications. 20-24th april 2009.

10.16. Co-organizer: Summer School of the Instituto de Matemáticas UNAM-Cuernavaca. 27-31th july 2009.

10.17. Coordinator of the Algebra´s session. Congreso Nacional, SMM. San Luis Potosí, SLP, 10th to 14th october 2011.

10.18. Invited talk: "Cones with modular face lattice", Icatta (Int. Conf. in Algebra, Topology and Topological algebras) 2010. Boca del Río Veracruz.

10.19. Invited talk: "k-algebras in network nets". Session: Miscelanea Matemática, Congreso Nacional, SMM. San Luis Potosí, SLP, 10th to 14th october 2011.

10.20. Invited talk: "k-algebras in network nets". UAM-Iztapalapa 5th nov 2012.

10.21. Invited talk in Minicourses of algebraic topics: "Applications of the theory of cones and matrices". UAG, Chilpancingo dec. 2012.

10.20. Mesa redonda: "Las matemáticas en el cruce de los caminos". Feria del Libro. Palacio de Minería. march 2013.

10.21. "Equilibrium theorems of the Perron-Frobenius type" Algebra & Discrete Mathematics' Seminar, Nov. 18th 2013.

10.22. Coordinator of the Algebra sesion in the Third Joint Meeting RSME-SMM (september 2014)

10.22. Co-organizer of the Jornadas de Algebra 2015 (CU, UNAM)

10.23. Co-organizer of the Jornadas de Algebra 2016. Algebraic Combinatorics and Computational Algebra. (CU, UNAM)

10.24. Co-organizer of the Matrixs Equations and Related Topics, (11-13 IM, UNAM, august 2017).

11. Plenary and Magistral Talks.

11.1. Plenary talk: The Coxeter transformations of Wild Algebras. (Conference in Representation theory of Algebras, Canada 1994).

11.2. Plenary talk: k-algebras in the neuronal webs studing. (Jornadas de Física y Matemáticas, UACJ, 17th april 2016).

11.1. Plenary talk: The new rising of Linear Algebra. Congress of the Mexican Mathematical Society (UAA, 27 november,2016).

11.2. Magistral talk. Introduction and Applications of Linear Algebra: THEORY OF CONES. NIBIRU Orange-day (UNAM, 12th may 2016)

12. Science popularization.

12.1. Coloquio Científicos en tu escuela. ACM Morelos. In Colegio Morelos. Cuernavaca 12th-june-2008.

12.2. Coloquio Científicos en tu escuela. AMC Morelos. In Col. Bachilleres #2. Jiutepec Morelos. 28th-nov-2008.

12.3. Invited talk: "Cones in the 'normal' life". UAEM 9th nov 2009.

12.4. Invited talk: "Applications of Linear Algebra". Festival Matemático, Univ. Aut. Edo. México, 17th may 2011.

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13. Citations: 135

14. Teaching (last 5 years)

14.1.Homological Algebra (UNAM-Cuernavaca) (graduate-course 2013-I)

14.2. Introduction to the theory of cones (one hour talk, for students of the Algebra & Discrete Mathematics UCDavis sept-18th 2013)

14.3. Algebraic Combinatorics in some areas fo Mathematics (X Summer-school) (UNAM-Cuernavaca) (junie 2013)

14.4. Superior Algebra I (UNAM) 2015-I

14.5. Introduction to the theory of cones and the Perron-Frobenius theory and Applications. Minicourse. (UACJ march, 2015)

14.6. Linear Algebra I (UNAM) 2015-II

14.7. Linear Algebra II (UNAM) 2016-I

14.8. Representation theory of Algebras and Applications. Minicourse (UACJ, april, 2016)

14.9. Algebra for phisicists 2016-II

14.10. Algebra for phisicists 2017-I

14.11. Linear Algebra I (UNAM) 2017-II

14.12. CAB-SUMEM. "Thinking as Sherlock Holmes" (20hours) (24-28 july 17). To junior-high teachers.

14.13. Linear Algebra I (UNAM) 2018-I