

Yasmín Águeda Ríos-Solís, Ph.D

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Assistant Professor

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Research Interests

General: Operations research, optimization problems, algorithm design.

Research Areas: Machine scheduling, exact resolution, heuristics, relaxations.

Application areas: Machine scheduling, transportation problems, production planning, bioinformatics.

Education

Postdoctoral Research Associate in **bioinformatics**, *Universität Bielefeld*, **AG Genominformatik**, Germany, January-December 2007.

supervisor [Ferdinando Cicalese](#).

support Cicalese's Sofja Kovalevskaja Award (Alexander von Humboldt Foundation and the German Federal Ministry of Research & Education).

Ph.D. in informatics, *University Pierre et Marie Curie, Paris VI, LIP6*, France, 2003–2007.

title *Scheduling with earliness-tardiness penalties and parallel machines (in french)*.

supervisors Philippe Chrétienne and [Francis Sourd](#).

committee: Marie-Claude Portmann, Alain Billionnet and Alain Quilliot

grant Mexican National Council of Science and Technology (CONACyT), 2003–2007

Master in computer science & operations research, *University Pierre et Marie Curie, Paris VI*, France, 2002–2003.

title *Preemptive just-in-time scheduling problem*.

supervisor [Francis Sourd](#).

grant Mexican National Council of Science and Technology (CONACyT), 2002–2003

Applied mathematics **Instituto Tecnológico Autónomo de México**, *Mexico*, 1997–2002.

title *Real options and dynamic programming*.

supervisor Hector Lomelí.

Academic Appointments

Assistant Professor **UANL, Graduate Program in Systems Engineering**, Monterrey, México, January 2008–present.

Visiting Appointments

Visiting Professor **Université d'Avignon et des Pays de Vaucluse, Laboratoire Informatique d'Avignon**, France, Hosted by P. Michelon and D. Quadri, June 2009.

Honors and Awards

Sofía Kovalévskaja Award **Mexican Mathematical Society - Sofía Kovalévskaja Foundation**, *For young women researchers in mathematics*, 3 November 2010.

SNI Fellow **Level 1**, *Third highest country-wide distinction granted by the Mexican National System of Research Scientists for scientific merit*, January 2009–December 2011.

PROMEP Fellow **(Perfil Deseable)**, *Distinction granted by the Secretary for Public Education (SEP) under its Faculty Improvement Program (PROMEP)*, 2009 - 2012.

As a graduate student

Fellowship **for Master and Ph.D. Studies**, *Granted by the Mexican National Council of Science and Technology*, 2002–2007.

Complementary fellowship **for abroad graduate students**, *Granted by the Mexican Public Education Ministry (SEP)*, 2002–2005.

As an undergraduate student

Especial mention **for Bachelor's thesis**, *Granted by ITAM*, 2002.

Work in Progress

Y.A. Rios-Solis and R.Z. Ríos-Mercado, editors. *Just in time systems (forthcoming)*. Series on Optimization and Its Applications. Springer, 2011.

P. Rabut, O.J. Ibarra-Rojas, and Y.A. Rios-Solis. Urban transport: efficient route planning in Monterrey. *Journal of Transport Geography (To be submitted to)*, pages –, 2010.

Y.A. Rios-Solis. Convex reformulations for quadratic programs with block shaped Hessians. *Computers and Operations Research (To be submitted to)*, pages –, 2010.

M.A. Saucedo-Espinosa, O.J. Ibarra-Rojas, and Y.A. Rios-Solis. Piece-mold-machine manufacturing planning considering auxiliary equipment requirements. *Computers and Operations Research (To be submitted to)*, -.

Submitted

E. Fritzilas, M. Milanic, J. Monnot, and Y.A. Rios-Solis. Resilience and optimization of identifiable bipartite graphs. *Discrete Applied Mathematics (Submitted)*, 2010.

O.J. Ibarra-Rojas and Y.A. Rios-Solis. Synchronization bus timetabling. *Transportation Research part B (Submitted)*, pages –, 2010.

Articles

M.-C Plateau and Y.A. Rios-Solis. Optimal solutions for unrelated parallel machines scheduling problems using convex quadratic reformulations. *European Journal of Operational Research*, 201(3):729–736, 2010.

E. Fritzilas, M. Milanic, S. Rahmann, and Y.A. Rios-Solis. Structural identifiability in low-rank matrix factorization (long version). *Algorithmica*, 56(3):313–332, 2009.

Y.A. Rios-Solis and F. Sourd. Exponential neighborhood search for a parallel machine scheduling problem. *Computers & Operations Research*, 35:1697–1712, 2008.

S. Kedad-Sidhoum, Y.A. Rios-Solis, and F. Sourd. Lower bounds for the earliness-tardiness scheduling problem on parallel machines with distinct due dates. *European Journal of Operational Research*, 189(3):1305–1316, 2008.

Y.A. Rios-Solis. Scheduling with earliness-tardiness penalties and parallel machines. *4OR: A Quarterly Journal of Operations Research*, 6(2):191–194, 2008.

Book Chapters

O.L. Chacon, Y.A. Rios-Solis, and O.J. Ibarra-Rojas. *Intelligent Systems in Operations: Models, Methods, and Applications in the Supply Chain*, chapter Pieces-moulds-machines manufacturing planning, pages 105–117. IGI Global, 2010.

E. Fritzilas, Y.A. Rios-Solis, and S. Rahmann. Structural identifiability in low-rank matrix factorization. volume 5092, pages 140–148. Proceedings of COCOON'08, LNCS, 2008.

Y.A. Rios-Solis and F. Sourd. Voisinage exponentiel pour un problème d'ordonnancement avec des pénalité d'avance et de retard et une date d'échéance commune. In J. C. Billaut and C. Esswein, editors, *Actes de conférence du 6ème Congrès de la Société Française de Recherche Opérationnelle et d'Aide à la Décision*, pages 133–149, 2005. ISBN: 2-86906-196-X.

Conferences

Y.I. Silva-Soto and Y.A. Rios-Solis. Planeación justo a tiempo: soluciones óptimas mediante reformulaciones convexas. In *Taller Latinoiberoamericano de Investigación de operaciones*, 2009.

Y.I. Silva-Soto and Y.A. Rios-Solis. Planeación justo a tiempo: soluciones óptimas mediante reformulaciones convexas. In *XIX Escuela nacional de Optimización*, 2009.

M.A. Acosta-Sánchez and Y.A. Rios-Solis. Espacio de soluciones para problemas de secuenciación del tipo justo a tiempo. In *XIX Escuela nacional de Optimización*, 2009.

Y.A. Rios-Solis and F. Sourd. Parallel scheduling problem with irregular cost functions. In *Proceedings of The Fifth ALIO/EURO conference on combinatorial optimization*, pages 101–101, 2005.

Y.A. Rios-Solis and F. Sourd. Large neighborhood for a parallel scheduling problem with earliness-tardiness penalties and a common due date. In G. Kendal, L. Lei, and M. Pinedo, editors, *Proceedings of the second Multidisciplinary International Conference on Scheduling: Theory and Applications*, pages 169–184, 2005.

S. Kedad-Sidhoum, Y.A. Rios-Solis, and F. Sourd. Lower bounds for the earliness-tardiness scheduling problem on parallel machines. In A. Oulamara and M.C. Portmann, editors, *Proceedings of the 9th International Conference on Project Management and Scheduling*, pages 210–213, 2004.

Student Thesis Supervision

In progress (as Supervising Professor)

- Ph.D. **Omar Jorge Ibarra Rojas**, *Graduate Program in Systems Engineering, UANL*.
- M.Sc. **Jesús Manuel Rodas Acevedo**, *Graduate Program in Systems Engineering, UANL*.
- M.Sc. **Nestor Miguel Cid García**, *Graduate Program in Systems Engineering, UANL*.
- M.Sc. **Miguel Lorenzo González Marroquín**, *Graduate Program in Systems Engineering, UANL*.

Chaired: M.Sc.

- M.Sc. **Yadira Isabel Silva Soto**, *Graduate Program in Systems Engineering, UANL*, "Planeación justo a tiempo: soluciones óptimas mediante reformulaciones convexas", June 30, 2010.
- Master **Paul Rabut**, *Master Intelligence Territoriale Information Spatiale et Aménagement, Université de Franche-Comté, Besançon France*, "Système de transport urbain de l'aire de métropolitaine de Monterrey (Mexique)", June 23, 2010.
(co-chaired with Céline Clauzel UFC-ThéMA, Université de Franche-Comté)

Committee Member / External Advisor

- M.Sc. **Mónica G. Elizondo**, "*Lower bounding schemes for territory design*", Graduate Program in Systems Engineering, UANL, July 15, 2010.
- Ph.D. **María Angélica Salazar Aguilar**, "*Models, Algorithms, and Heuristics for Multiobjective Commercial Territory Design*", Graduate Program in Systems Engineering, UANL, May 7, 2010.
- Ph.D. **María Gabriela García Anaya**, "*Expansión de Capacidad de Plantas Batch*", Graduate Program in Systems Engineering, UANL, January 26, 2010.
- Ph.D. **Janía Astrid Saucedo Martínez**, "*Uso de Cotas Lagrangianas Mejoradas para los Problemas de Optimización con la Estructura de Descomposición Doble*", Graduate Program in Systems Engineering, UANL, Diciembre 8, 2009.
- M.Sc. **Omar Jorge Ibarra Rojas**, "*Programación Pieza-Molde-Máquina en Planeación de Producción mediante una Búsqueda Local Iterativa*", Graduate Program in Systems Engineering, UANL, June 24, 2009.
- Ph.D. **Klaus-Bernd Schrümann**, "*Counting suffix arrays and strings*", Graduate Program, Universität Bielefeld, Germany, September, 2007.

Projects

Grants as Principal Investigator

- 11/2010 - **"Assignment problem with time functions"**, Awarded by Mexican Mathematical Society
11/2011 - Sofia Kovalévskaja Foundation, \$24,000.00 pesos.
- 07/2009 - **"Assignment problem with time functions"**, Awarded by UANL, Scientific and Tech-
07/2010 nological Research Support Program, Grant IT196-09, \$65,000.00 pesos.
- 10/2009 - **"Landscape study for the just-in-time scheduling problem"**, Awarded by CONACYT:
10/2012 Basic scientific reseach (Physic, Mathematic and Earth sciences area), Grant 101857,
\$638,000.00 pesos.
- 08/2008 - **"Quadratic programming for exactly solving just-in-time scheduling"**,
08/2010 Awarded by PROMEP: Support for incorporating new full time professors, Grant
PROMEP/103.05/08/3125, \$502,185.00 pesos.
- 01/2008 - **"Large scale optimization for scheduling problems" (with Igor Litvinchev)**, Awarded
12/2008 by CONACYT: Complementary support program for the consolidation of research groups,
Grant no. 74766, \$450,000.00 pesos.

Participation in other projects

- 2009 **Research associate**, "Mathematical models and tools for the optimization of an urban
transportation enterprise", Awarded by CONACYT: Innovation projects, Grant C0003-
2009-01/113032, obtained by [Das-Sistemas](#).
- 2008 **Research associate**, "Análisis de impacto del Sitema de Créditos propuesto en el Modelo
Educativo de la UANL en los programas educativos de nivel licenciatura que ofert la UANL",
UANL, 30 hours.
- 2007 **Research associate**, "Quadratic programming and scheduling", Awarded by GDR RO
(France).

Teaching

Courses Taught: Graduate

- Selected topics in multiobjective optimization: UANL, México (32 hrs./semester), 2010.
- Foundations of Integer Programming: UANL, México (48 hrs./semester), 2010.
- Network Flows: UANL, México (48 hrs./semester), 2 times (2009,2010).
- Linear Optimization: UANL, México (48 hrs./semester), 2 times (2009, 2010).

Courses Taught: Undergraduate.

- Operations research: UANL, México (48 hrs./semester), 2 times (2008, 2010).
- Operations research: EFREI (assistant), France.
- Internet: Université de Nanterre, France.
- New Information and communication technologies: Université de Nanterre, France.

Professional Activities

Service to UANL

- January 2008-present **Academic group (Cuerpo Académico)**, *CA Ingeniería de Sistemas*, Consolidated group.
- August-December 2010 **Industrial Practice Supervisor**, *1 undergraduate students supervised during their practices at PROLEC*, Carlos Alberto Gómez Hernández, IAS-FIME-UANL.
- July-August 2010 **Principal Coordinator**, *Scientific Summer Program at the Materials and Electrical Engineering Faculty*, UANL.
- July 2010 **Host Researcher**, *1 undergraduate student supervised during the XX Scientific Summer Program*, Eduardo González Ayala (Prepa 25, UANL).
- January- May 2010 **Industrial Practice Supervisor**, *2 undergraduate students supervised during their practices at PROLEC*, Ana Carolina Robledo Pedraza and Rolando Loera Alvarez, FIME-UANL.
- August-December 2009 **Industrial Practice Supervisor**, *2 undergraduate students supervised during their practices at PROLEC*, José Ovalle Medina and Jorge Alberto Escamilla Chapa, FIME-UANL.
- July 2009 **Host Researcher**, *1 undergraduate student supervised during the XIX Scientific Summer Program*, Laura N. Espriella (Prepa 7, UANL).

Service to Mexican Academy of Sciences

- June-August 2010 **Host Researcher**, *2 undergraduate students supervised during the XX Scientific Summer Program*, Fernando Elizalde Ramírez (IT-Cerro Azul) and Francisco Márquez Ramírez (ITESM-Cd. Juárez).
- June-August 2008 **Host Researcher**, *2 undergraduate students supervised during the XVIII Scientific Summer Program*, Luis Enrique Sanabria Vázquez (IT-Culiacán) and Alicia Berenice Rodríguez Yáñez (IT-Culiacán).

Service to DELFIN (Interinstitutional program for the consolidation of research in the Pacific)

- June-August 2008 **Host Researcher**, *2 undergraduate students supervised during the XVIII Scientific Summer Program*, Andrea Sanaé Manríquez Vargas (IT-Morelia) and María Paulina García Champó (IT-Tuxtla Gutiérrez).

Journal Refereeing

- [Ingeniare. Revista chilena de ingeniería](#), 1 paper
- [TOP: An Official Journal of the Spanish Society of Statistics and Operations Research](#), 1 paper
- [Computers & Operations Research](#), 3 papers

- [Journal of the Operational Research Society](#), 2 papers
- [Journal of Scheduling](#), 1 paper
- [Information Processing Letters](#), 1 paper

Talks

- 8th December 2010 **Invited speaker: Convex Reformulations**, *NAMIAM 2010: First North American Meeting on Industrial and Applied Mathematics*, Huatulco, Mexico.
- 24th September 2010 **Bus planning optimization**, *LIP6, Combinatorics group, UPMC-Paris 6*, Paris, France, invited by S. Kedad-Sidhoum.
- 21th September 2010 **Bus planning optimization**, *Faculty of Sciences, Information and Computer Science, University of Utrecht*, Uthrecht, The Netherlands, invited by M. van den Akker.
- 8th September 2010 **Bus planning optimization**, *Mathematics Institute, UNAM Morelia Unit*, Morelia, México, invited by D. Pellicier.
- 21th July 2010 **Plenary speaker: Urban transport optimization at Monterrey**, *IOCA II, Encuentro Iberoamericano de Investigación Operativa y Ciencias Administrativas*, Monterrey, Mexico.
- 14th July 2010 **Block Hessian matrices with 0-1 quadratic convex reformulations**, *Euro XXIV, European Conference on Operations Research*, Lisbon, Portugal.
- 25th September 2009 **Just in time scheduling and industrial applications**, *Mathematics Department Seminar Series, ITAM, D.F., México*, invited by E. Possani.
- 21th March 2009 **Invited talk: Producción justo a tiempo**, *National School on Optimization and Numerical Analysis (ENOAN 2009)*, BUAP, Puebla, México.
- 19th February 2009 **Probando la NP-dificultad de dos problemas combinatorios**, *PISIS Seminar Series, FIME, UANL*, Monterrey, México.
- 11th November 2008 **Just-in-time production**, *Cátedra de Investigación en Ingeniería Industrial, ITESM*, Monterrey, México, Invited by José Luis González Velarde.
- 23th October 2008 **O.R., How to make money in a short time and in a secure way?**, *Cultural FIME Week, FIME, UANL*, Monterrey, México.
- October 2008 **Master and PhD in Systems Engineering**, *XEITC Radio*, Celaya, México.
- August 2008 **Mathematical games**, *PISIS Summer Seminar Series, FIME, UANL*, Monterrey, México.
- April 2008 **Signal-Sensor Network Design Using Structural Identifiability in Low-Rank Matrix Approximation**, *PISIS Seminar Series, FIME, UANL*, Monterrey, México.
- December 2007 **Homologous operator region of transcription factors**, *Genome Informatics's research seminar*, Bielefeld, Germany.
- January 2007 **Just-in-time scheduling**, *Genome Informatics's research seminar*, Bielefeld, Germany, Invited by F. Cicalese.
- December 2006 **Just-in-time production**, *PISIS Seminar Series, FIME, UANL*, Monterrey, México, Invited by R.Z. Ríos.
- December 2006 **Just-in-time scheduling (talk for students)**, *PISIS Seminar Series, FIME, UANL*, Monterrey, México, Invited by R.Z. Ríos.

Languages

Spanish	Native tongue.
French	100%.
English	100%.
German, Dutch	Some notions.