

## Welcome to Enrique Miranda's homepage

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I am an Associate Professor at the Department of [Statistics and Operations Research](#) of the [University of Oviedo](#). Between 2003 and 2008, I was an assistant Professor at [Rev Juan Carlos University](#).

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### Education:

- **Bs.C. degree** in Mathematics by the University of Oviedo (July 1999)
- **PhD degree** in Mathematics by the University of Oviedo (September 2003).

PhD Thesis: "Análisis de la información probabilística de los conjuntos aleatorios". Promotors: Inés Couso Blanco and Pedro Gil Álvarez.

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### Courses, 2016/2017:

1. Procesos Estocásticos (4º Matemáticas).
2. Statistics (1º del Grado en Ingeniería de Tecnologías Industriales).
3. Estadística (1º del Grado en Ingeniería en Tecnologías y Servicios de Telecomunicación)
4. Procesos Estocásticos (Máster en Análisis de Datos para la Inteligencia de Negocios).

**Tutorías**, segundo cuatrimestre:

Lunes, 12:30-13:30h, Martes, 16-17h, Jueves 9-11h: despacho 5.1.01, E.P. de Ingeniería, Gijón.

Martes, 9-11h: despacho 5-12, Facultad de Geología, Oviedo.

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### Research interests:

My research has focused on different aspects of imprecise probability theory. Imprecise probabilities arise in situations where the existence of imprecise or vague information makes it unadvisable to work with a precise and unique probability distribution. In those situations, it may be useful (and more reasonable) to consider alternative models, such as sets of probability measures, upper and lower probabilities, Choquet capacities, etc. You can find a nice review on imprecise probabilities at [Matthias Troffaes'](#) homepage, and at the website of the Society for Imprecise Probability: Theories and Applications ([SIPTA](#)).

The main idea of my PhD thesis, which I carried out under the guidance of Inés Couso and Pedro Gil, was to compare the different imprecise probability models that we may consider when we regard random sets as imprecise random variables. You can see a summary of my dissertation [here](#).

I have also made some research on the behavioral theory of imprecise probabilities. This theory unifies the different imprecise probability models under the concepts of coherent lower and upper previsions, and was developed mainly by Peter Walley, with a strong influence of de Finetti's previous work on coherent previsions. My research in this topic has focused on some of the theoretical challenges, and I have done most of it in collaboration with [Gert de Cooman](#) and [Marco Zaffalon](#). You can find here a [survey](#) of the theory.

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### Publications:

[BOOKS](#)[JOURNAL PAPERS](#)[CONFERENCE PAPERS](#)[ONGOING](#)[ACTIVITIES](#)

## 1. Books, papers in books:

1. Enrique Miranda, *Análisis de la información probabilística de los conjuntos aleatorios*. Tesis Doctoral. Servicio de Publicaciones de la Universidad de Oviedo, ISBN: 84-8317-376-X, pp.1—331, 2003. [Summary](#).
2. Gert de Cooman and Enrique Miranda, *Symmetry of models versus models of symmetry*. In: **Probability and Inference: Essays in Honour of Henry E. Kyburg**, (W. Harper and G. Wheeler, eds.), pages 67--149. College Publications, 2007. [Abstract](#) and [full paper](#).
3. Enrique Miranda, Gert de Cooman and Erik Quaeghebeur, *The moment problem for finitely additive probabilities*. In: **Uncertainty and Intelligent Information Systems**, (B. Bouchon-Meunier, R. R. Yager, C. Marsala and M. Rifqi, eds.), pages 33--45. World Scientific, 2008. [Abstract](#).
4. Enrique Miranda, *A comparison of conditional coherence concepts for finite spaces*. In **Foundations of Reasoning under Uncertainty**. Studies and Fuzziness and Soft Computing, vol. 249, pages 223-246 (B. Bouchon-Meunier, L. Magdalena, M. Ojeda-Aciedo, J.L. Verdegay, R.R. Yager, eds). Springer, 2010. [Abstract](#).
5. Enrique Miranda and Gert de Cooman, *Lower previsions*. Chapter 2 in **An Introduction to Imprecise Probabilities** (T. Augustin, F. Coolen, G. de Cooman, M. Troffaes, eds.), pages 28-55. Wiley, 2014.
6. Enrique Miranda and Gert de Cooman, *Structural judgements*. Chapter 3 in **An Introduction to Imprecise Probabilities** (T. Augustin, F. Coolen, G. de Cooman, M. Troffaes, eds.), pages 56-78. Wiley, 2014.
7. Enrique Miranda, Susana Montes, Susana Díaz. [Statistics for Engineers. Exercises with solutions](#). University of Oviedo, 2016.

## 2. Papers in journals.

If you want to browse by topic (note that some papers may appear in more than one category):

Random sets	<a href="#">1,4,5,6,7,22</a>
Coherent lower previsions	<a href="#">5,8,10,11,12,13,14,16,17,18,20,23,24,25,27,31, 33, 35, 44</a>
Non-additive measures	<a href="#">1,2,3,4,8,15,29, 38, 39</a>
Updating	<a href="#">19,30, 36</a>
Independence	<a href="#">2,21,26,28, 40, 42</a>
Distribution functions	<a href="#">9,12,32,34, 37, 41</a>
Stochastic orders	<a href="#">32, 34, 43</a>

(The available full papers constitute earlier versions of the published ones).

1. Enrique Miranda, Inés Couso and Pedro Gil, *Relationships between possibility measures and nested random sets*. International Journal of Uncertainty, Fuzziness and Knowledge-Based Systems, Vol 10 (1), pp. 1--15, 2002. [Abstract](#) and [full paper](#).
2. Enrique Miranda and Gert de Cooman, *Epistemic independence in numerical possibility theory*. International Journal of Approximate Reasoning, Vol.32(1), pp. 23--42, 2003. [Abstract](#) and [full paper](#).
3. Enrique Miranda, Inés Couso and Pedro Gil, *Extreme points of credal sets generated by 2-alternating capacities*. International Journal of Approximate Reasoning, Vol 33(1), pp. 95--115, 2003. [Abstract](#) and [full paper](#).
4. Enrique Miranda, Inés Couso and Pedro Gil, *A random set characterisation of possibility measures*. Information Sciences, Vol 168(1--4), pp. 51--75, 2004. [Abstract](#) and [full paper](#).
5. Enrique Miranda, Gert de Cooman and Inés Couso, *Lower previsions induced by multi-valued mappings*. Journal of Statistical Planning and Inference, Vol 133(1), pp. 173-197, 2005. [Abstract](#) and [full paper](#).
6. Enrique Miranda, Inés Couso and Pedro Gil, *Random sets as imprecise random variables*. Journal of Mathematical Analysis and Applications, Vol 307(1), pp. 32-47, 2005. [Abstract](#) and [full paper](#).
7. Enrique Miranda, Inés Couso and Pedro Gil, *Random intervals as a model for imprecise information*. Fuzzy Sets and Systems, Vol 154(3), pp. 386-412, 2005. [Abstract](#) and [full paper](#).
8. Gert de Cooman, Matthias Troffaes and Enrique Miranda. *n-monotone lower previsions*. Journal of Intelligent and Fuzzy Systems, Vol 16(4) (Special Issue dedicated to the 60th birthday of Etienne E. Kerre), pp. 253-263, 2005. [Abstract](#) and [full paper](#).
9. Enrique Miranda, Gert de Cooman and Erik Quaeghebeur, *The Hausdorff moment problem under finite additivity*. Journal of Theoretical Probability, Vol 20(3), 663-693, 2007. [Abstract](#) and [full paper](#).
10. Enrique Miranda and Gert de Cooman, *Marginal extension in the theory of coherent lower previsions*. International Journal of Approximate Reasoning, Vol 46(1), 188-225, 2007. [Abstract](#) and [full paper](#).
11. Gert de Cooman, Matthias Troffaes and Enrique Miranda, *A unifying approach to integration for bounded positive charges*. Journal of Mathematical Analysis and Applications, 340 (2), 982-999, 2008. [Abstract](#) and [full paper](#).

12. Enrique Miranda, Gert de Cooman and Erik Quaeghebeur, *Finitely additive extensions of distribution functions and moment sequences: the coherent lower prevision approach*. International Journal of Approximate Reasoning, 48(1), 132-155, 2008. [Abstract](#), [full paper](#) and [errata](#).
13. Enrique Miranda, *A survey of the theory of coherent lower previsions*. International Journal of Approximate Reasoning, 48(2), 628-658, 2008. [Abstract](#) and [full paper](#).
14. Gert de Cooman and Enrique Miranda, *Weak and strong laws of large numbers for coherent lower previsions*. Journal of Statistical Planning and Inference, 138(8), 2409-2432, 2008. [Abstract](#) and [full paper](#).
15. Gert de Cooman, Matthias Troffaes and Enrique Miranda. *n-Monotone exact functionals*. Journal of Mathematical Analysis and Applications, 347(1), 143--156, 2008. [Abstract](#) and [full paper](#).
16. Enrique Miranda and Marco Zaffalon. *Coherence graphs*. Artificial Intelligence, 173(1), 104--144, 2009. [Abstract](#) and [full paper](#).
17. Gert de Cooman and Enrique Miranda, *Forward irrelevance*. Journal of Statistical Planning and Inference, 139(2), 256-276, 2009. [Abstract](#) and [full paper](#).
18. Gert de Cooman, Enrique Miranda and Erik Quaeghebeur, *Representation insensitivity in immediate prediction*. International Journal of Approximate Reasoning, 50(2), special issue on the Imprecise Dirichlet Model, 204-216, 2009. [Abstract](#) and [full paper](#).
19. Enrique Miranda, *Updating coherent previsions on finite spaces*. Fuzzy Sets and Systems, 160(9), 1286-1307, 2009. [Abstract](#) and [full paper](#).
20. Marco Zaffalon and Enrique Miranda. *Conservative inference rule for uncertain reasoning under incompleteness*. Journal of Artificial Intelligence Research, 34, 757-821, 2009. [Abstract](#) and [full paper](#).
21. Gert de Cooman, Erik Quaeghebeur and Enrique Miranda, *Exchangeable lower previsions*. Bernoulli, 15(3), 721-735, 2009. [Abstract](#) and [full paper](#).
22. Enrique Miranda, Inés Couso and Pedro Gil. *Approximation of upper and lower probabilities by measurable selections*. Information Sciences, 180(8), 1407-1417, 2010. [Abstract](#) and [full paper](#).
23. Enrique Miranda and Marco Zaffalon, *Conditional models: coherence and inference through sequences of joint mass functions*. Journal of Statistical Planning and Inference, 140(7), 1805-1833, 2010. [Abstract](#) and [full paper](#).
24. Enrique Miranda and Marco Zaffalon. *Notes on desirability and conditional lower previsions*. Annals of Mathematics and Artificial Intelligence, 60(3-4), 251-309, 2010. [Abstract](#) and [full paper](#).
25. Alessio Benavoli, Marco Zaffalon and Enrique Miranda, *A new robust approach to filtering based on coherent lower previsions*. IEEE Transactions on Automatic Control, 56(7), 1567--1581, 2011. [Abstract](#) and [full paper](#).
26. Gert de Cooman, Enrique Miranda and Marco Zaffalon. *Independent natural extension*. Artificial Intelligence, 175(12-13), 1911--1950, 2011. [Abstract](#) and [full paper](#).
27. Enrique Miranda, Marco Zaffalon and Gert de Cooman. *Conglomerable natural extension*. International Journal of Approximate Reasoning, 53(8), 1200--1227, 2012. [Abstract](#) and [full paper](#).
28. Gert de Cooman and Enrique Miranda. *Irrelevant and independent natural extension for sets of desirable gambles*. Journal of Artificial Intelligence Research, 45, 601--640, 2012. [Abstract](#) and [full paper](#).
29. Matthias Troffaes, Enrique Miranda and Sébastien Destercke. *On the connection between probability boxes and possibility measures*. Information Sciences, 224, 88--108, 2013. [Abstract](#) and [full paper](#).
30. Marco Zaffalon and Enrique Miranda. *Probability and time*. Artificial Intelligence, 198, 1--51, 2013. [Abstract](#) and [full paper](#).
31. Enrique Miranda and Marco Zaffalon. *Conglomerable coherence*. International Journal of Approximate Reasoning, 54(9), 1322--1350, 2013. [Abstract](#) and [full paper](#).
32. Ignacio Montes, Enrique Miranda and Susana Montes. *Stochastic dominance with imprecise information*. Computational Statistics and Data Analysis, 71(C), 867-885, 2014. [Abstract](#) and [full paper](#).
33. Gert de Cooman and Enrique Miranda. *Lower previsions induced by filter maps*. Journal of Mathematical Analysis and Applications, 410(1), 101--116, 2014. [Abstract](#) and [full paper](#).
34. Ignacio Montes, Enrique Miranda and Susana Montes. *Decision making with imprecise utilities and beliefs by means of statistical preference and stochastic dominance*. European Journal of Operational Research, 234(1), 209--220, 2014. [Abstract](#) and [full paper](#).
35. Enrique Miranda, Marco Zaffalon. *On the problem of computing the conglomerable natural extension*. International Journal of Approximate Reasoning, 56(A), 1--27, 2015. [Abstract](#) and [full paper](#).
36. Enrique Miranda, Ignacio Montes. *Coherent updating of non-additive measures*. International Journal of Approximate Reasoning(B), 56, 159-177, 2015. [Abstract](#) and [full paper](#).
37. Ignacio Montes, Enrique Miranda, Renato Pelessoni, Paolo Vicig. *Sklar's theorem in an imprecise setting*. Fuzzy Sets and Systems, 278C, 48-66, 2015. [Abstract](#) and [full paper](#).
38. Enrique Miranda, Matthias Troffaes, Sébastien Destercke. *A geometric and game-theoretic study of the conjunction of possibility measures*. Information Sciences, 298, 373-389, 2015. [Abstract](#) and [full paper](#).
39. Enrique Miranda, Sébastien Destercke. *Extreme points of the credal sets generated by comparative probabilities*. Journal of Mathematical Psychology, 64/65, 44-57, 2015. [Abstract](#) and [full paper](#).
40. Enrique Miranda, Marco Zaffalon. *Independent products in infinite spaces*. Journal of Mathematical Analysis and Applications, 425/1, 460-488, 2015. [Abstract](#) and [full paper](#).
41. Renato Pelessoni, Paolo Vicig, Ignacio Montes, Enrique Miranda. *Bivariate p-boxes*. International Journal of Uncertainty, Fuzziness and Knowledge-Based Systems, 24/2, 229-263, 2016. [Abstract](#) and [full paper](#).
42. Enrique Miranda, Marco Zaffalon. *Conformity and independence with coherent lower previsions*. International Journal of Approximate Reasoning, 78/C, 125-137, 2016. [Abstract](#) and [full paper](#).
43. Ignacio Montes, Enrique Miranda, Susana Montes. *Imprecise stochastic orders and fuzzy rankings*. Fuzzy Optimization and Decision Making, to appear. [Abstract](#) and [full paper](#).
44. Enrique Miranda, Marco Zaffalon. *Full conglomerability*. Journal of Statistical Theory and Practice, to appear. [Abstract](#) and [full paper](#).
44. Ignacio Montes, Enrique Miranda. *Bivariate p-boxes and maxitive functions*. International Journal of General Systems, to appear. [Abstract](#) and [full paper](#).

### 3. Papers in Proceedings of conferences.

1. Enrique Miranda and Gert de Cooman, *Independent products of numerical possibility measures*. Proceedings of the 2nd International Symposium on Imprecise Probabilities and Their Applications (ISIPTA'01). Ithaca (New York), June 2001. [Abstract](#).
2. Enrique Miranda, Inés Couso and Pedro Gil, *On the probabilities dominated by a 2-alternating capacity on a separable metric space*. Proceedings of the International Summer School on Aggregation Operators and Their Applications (AGOP'01). Oviedo (Spain), July 2001. [Abstract](#).
3. Enrique Miranda, Gert de Cooman and Inés Couso, *Imprecise probabilities induced by multi-valued mappings*. Proceedings of the Ninth International Symposium on Information Processing and Management of Uncertainty (IPMU'2002). Annecy (France), July 2002. [Abstract](#).
4. Enrique Miranda, Inés Couso and Pedro Gil, *Upper probabilities and selectors of random sets*. Presented at the First International Workshop on Soft Methods in Probability and Statistics (SMPS'02). Warsaw (Poland), September 2002. Included in *Soft methods in Probability, Statistics and Data-Analysis* (P. Grzegorzewski, O. Hryniewicz, M. A. Gil, eds), pages 126--133. Physica-Verlag, 2002. [Abstract](#).
5. Enrique Miranda, Inés Couso and Pedro Gil, *Relaciones entre medidas de posibilidad y capacidades maxitivas*. Actas del XI Congreso Español en Tecnologías y Lógica Fuzzy (ESTYLF'2002). León (Spain), September 2002. [Abstract](#).
6. Enrique Miranda, *Estudio de la información probabilística de los intervalos aleatorios*. Actas del 27 Congreso Nacional de Estadística e Investigación Operativa (SEIO'2003). Lleida (Spain), April 2003. [Abstract](#).
7. Enrique Miranda, Inés Couso and Pedro Gil, *Study of the probabilistic information of a random set*. Proceedings of the Third International Symposium on Imprecise Probabilities and Their Applications (ISIPTA'03). Lugano (Switzerland), July 2003. [Abstract](#).
8. Gert de Cooman and Enrique Miranda, *A weak law of large numbers for coherent lower previsions*. Proceedings of the Tenth International Symposium on Information Processing and Management of Uncertainty (IPMU'2004). Perugia (Italy), July 2004. [Abstract](#).
9. Inés Couso, Enrique Miranda and Gert de Cooman, *A possibilistic interpretation of the expectation of a fuzzy random variable*. Presented at the Second International Conference on Soft Methods in Probability and Statistics (SMPS'2004). Oviedo (Spain), September 2004. Included in *Soft Methodology and Random Information Systems* (M. López Díaz, M. A. Gil, P. Grzegorzewski, O. Hryniewicz, J. Lawry, eds), pages 133--140. Springer, 2004. [Abstract](#) and [full paper](#).
10. Enrique Miranda, *Consonant random sets: structure and properties*. Presented at the Eighth European Conference on Symbolic and Quantitative Approaches to Reasoning with Uncertainty (ECSQARU'2005). Barcelona (Spain), July 2005. Included in *Lecture Notes in Artificial Intelligence* (L. Godó, ed.), Vol. 3571, pages 860--871. Springer, 2005. [Abstract](#) and [full paper](#).
11. Gert de Cooman, Matthias Troffaes and Enrique Miranda, *n-Monotone lower previsions and lower integrals*. Proceedings of the Fourth International Symposium on Imprecise Probabilities and Their Applications (ISIPTA'05). Pittsburgh (Pennsylvania), July 2005. [Abstract](#).
12. Enrique Miranda, Gert de Cooman and Erik Quaeghebeur, *The moment problem for finitely additive probabilities*. Proceedings of the Eleventh International Symposium on Information Processing and Management of Uncertainty (IPMU'2006). Paris (France), July 2006. [Abstract](#).
13. Enrique Miranda and Marco Zaffalon, *Coherence graphs*. Proceedings of the Fifth International Symposium on Imprecise Probabilities and Their Applications (ISIPTA'07). Prague (Czech Republic), July 2007. [Abstract](#).
14. Gert de Cooman, Enrique Miranda and Erik Quaeghebeur, *Immediate prediction with representation insensitivity*. Proceedings of the Fifth International Symposium on Imprecise Probabilities and Their Applications (ISIPTA'07). Prague (Czech Republic), July 2007. [Abstract](#).
15. Gert de Cooman, Erik Quaeghebeur and Enrique Miranda, *Representing and assessing exchangeable lower previsions*. Proceedings of the 56th Session of the International Statistical Institute. Lisbon (Portugal), August 2007. [Abstract](#).
16. Gert de Cooman and Enrique Miranda, *El teorema de representación de Riesz y la extensión de probabilidades finitamente aditivas*. Actas del XXX Congreso Nacional de Estadística e Investigación Operativa. Valladolid (Spain), September 2007. [Abstract](#).
17. Enrique Miranda, *Coherent updating on finite spaces*. Proceedings of the Twelfth International Symposium on Information Processing and Management of Uncertainty (IPMU'2008). Málaga (Spain), June 2008. [Abstract](#).
18. Gert de Cooman and Enrique Miranda, *The F. Riesz representation theorem and finite additivity*. Proceedings of the Fourth International Conference on Soft Methods in Probability and Statistics. Toulouse (France), September 2008. [Abstract](#).
19. Enrique Miranda, Matthias Troffaes and Sébastien Destercke, *Generalised p-boxes on totally ordered spaces*. Proceedings of the Fourth International Conference on Soft Methods in Probability and Statistics. Toulouse (France), September 2008. [Abstract](#).
20. Enrique Miranda, Inés Couso and Pedro Gil, *Upper probabilities attainable by distributions of measurable selections*. Presented at the Tenth European Conference on Symbolic and Quantitative Approaches to Reasoning with Uncertainty (ECSQARU'2009). Verona (Italy), July 2009. Included in *Lecture Notes in Artificial Intelligence*, Vol. 5590 (C. Sossai and G. Chemello, eds.), pages 335-346. [Abstract](#).
21. Alessio Benavoli, Marco Zaffalon and Enrique Miranda, *Reliable hidden Markov model filtering through coherent lower previsions*. Presented at the 12th International Conference on Information Fusion (FUSION'2009). Seattle (Washington), July 2009. [Abstract](#).
22. Enrique Miranda and Marco Zaffalon, *Natural extension as a limit of regular extensions*. Proceedings of the Sixth International Symposium on Imprecise Probabilities and Their Applications (ISIPTA'09). Durham (England), July 2009. [Abstract](#).
23. Gert de Cooman, Enrique Miranda and Marco Zaffalon, *Independent natural extension*. Proceedings of the Thirteenth International Conference on Information Processing and Management of Uncertainty (IPMU'2010). Dortmund (Germany), June 2010. [Abstract](#).
24. Gert de Cooman, Enrique Miranda and Marco Zaffalon, *Factorisation properties of the strong product*. Proceedings of the Fifth International Conference on Soft Methods in Probability and Statistics (SMPS'2010). Oviedo (Spain), September 2010. [Abstract](#).



25. Matthias Troffaes, Enrique Miranda and Sébastien Destercke, *On the connection between probability boxes and possibility measures*. Proceedings of the Seventh Conference of the European Society for Fuzzy Logic and Technology (EUSFLAT'2011). Aix le Bains (France), July 2011. [Abstract](#)
26. Gert de Cooman and Enrique Miranda. *Independent natural extension for sets of desirable gambles*. Proceedings of the Seventh Conference on Imprecise Probability: Theories and Applications (ISIPTA'2011). Innsbruck (Austria), July 2011. [Abstract](#).
27. Enrique Miranda, Marco Zaffalon and Gert de Cooman. *Conglomerable natural extension*. Proceedings of the Seventh Conference on Imprecise Probability: Theories and Applications (ISIPTA'2011). Innsbruck (Austria), July 2011. [Abstract](#).
28. Ignacio Montes, Enrique Miranda and Susana Díaz. *Imprecise preferences by means of probability boxes*. Proceedings of the 4th International Conference of the ERCIM Working Group on Computing and Statistics (ERCIM'2011). London (United Kingdom), December 2011. [Abstract](#).
29. Gert de Cooman and Enrique Miranda. *Lower previsions induced by filter maps*. Proceedings of the Fourteenth International Conference on Information Processing and Management of Uncertainty (IPMU'2012). Catania (Italy), July 2012. [Abstract](#).
30. Enrique Miranda and Marco Zaffalon, *Conglomerable coherent lower previsions*. Proceedings of the Sixth International Conference on Soft Methods in Probability and Statistics (SMPS'2012). Konstanz (Germany), October 2012. [Abstract](#).
31. Enrique Miranda and Alejandro García Huergo, *Stochastic dominance with non-additive measures*. 5th International Conference of the ERCIM Working Group on Computing and Statistics. (ERCIM'2012). Oviedo (Spain), December 2012. [Abstract](#).
32. Ignacio Montes, Enrique Miranda and Susana Montes, *Imprecise statistical preferences*. 5th International Conference of the ERCIM Working Group on Computing and Statistics. (ERCIM'2012). Oviedo (Spain), December 2012. [Abstract](#).
33. Enrique Miranda and Sébastien Destercke, *Extreme points of the credal sets generated by elementary comparative probabilities*. 12th European Conference on Symbolic and Quantitative Approaches to Reasoning under Uncertainty (ECSQARU'2013). Utrecht (The Netherlands), July 2013. [Abstract](#).
34. Enrique Miranda and Ignacio Montes, *Coherent updating of 2-monotone previsions*. 8th International Symposium on Imprecise Probability: Theories and Applications (ISIPTA'2013). Compiègne (France), July 2013. [Abstract](#).
35. Enrique Miranda and Marco Zaffalon, *Computing the conglomerable natural extension*. 8th International Symposium on Imprecise Probability: Theories and Applications (ISIPTA'2013). Compiègne (France), July 2013. [Abstract](#).
36. Renato Pelessoni, Paolo Vicig, Ignacio Montes and Enrique Miranda, *Imprecise copulas and bivariate stochastic orders*. Proceedings of the EUROFUSE Workshop on Uncertainty and Imprecision Modelling in Decision Making (EUROFUSE'2013). Oviedo (Spain), December 2013. [Abstract](#).
37. Ignacio Montes, Enrique Miranda and Susana Montes, *Connecting interval-valued fuzzy sets with imprecise probabilities*. Proceedings of the 7th International Conference on Soft Methods in Probability and Statistics (SMPS'2014). Warsaw (Poland), September 2014. [Abstract](#).
38. Ignacio Montes, Enrique Miranda and Susana Montes, *Stochastic orders for fuzzy random variables*. Proceedings of the 7th International Conference on Soft Methods in Probability and Statistics (SMPS'2014). Warsaw (Poland), September 2014. [Abstract](#).
39. Ignacio Montes, Enrique Miranda and Susana Montes, *Ranking fuzzy sets and fuzzy random variables by means of stochastic orders*. Proceedings of IFSA-EUSFLAT 2015. Gijón (Spain), July 2015. [Abstract](#).
40. Enrique Miranda and Marco Zaffalon, *Conformity and independence for coherent lower previsions*. Proceedings of the 9th International Conference on Imprecise Probability: Theories and Applications (ISIPTA'2015). Pescara (Italy), July 2015. [Abstract](#).
41. Arthur van Camp, Gert de Cooman, Enrique Miranda and Erik Quaeghebeur, *Modelling indifference with choice functions*. Proceedings of the 9th International Conference on Imprecise Probability: Theories and Applications (ISIPTA'2015). Pescara (Italy), July 2015. [Abstract](#).
42. Ignacio Montes, Enrique Miranda, *Bivariate p-boxes and maxitive functions*. Proceedings of the 16th International Conference on Information Processing and Management of Uncertainty (IPMU'2016). Eindhoven (The Netherlands), June 2016. [Abstract](#).
43. Enrique Miranda and Marco Zaffalon, *Full conglomerability, continuity and marginal extension*. Proceedings of the 8th International Conference on Soft Methods in Probability and Statistics (SMPS'2016). Rome (Italy), September 2016. [Abstract](#).
44. Arthur van Camp, Enrique Miranda and Gert de Cooman, *Lexicographic choice functions without archimedeanity*. Proceedings of the 8th International Conference on Soft Methods in Probability and Statistics (SMPS'2016). Rome (Italy), September 2016. [Abstract](#).
45. Ignacio Montes, Enrique Miranda, *Extreme points of the set of probabilities associated with a possibility measure*. Actas del XXXVI Congreso Nacional de Estadística e Investigación Operativa (SEIO'2016). Toledo (Spain), September 2016. [Abstract](#).

#### 4. Miscellaneous work. Papers under revision, technical reports...

##### Technical reports (downloadable)

1. Enrique Miranda and Gert de Cooman. *Coherence and independence in non-linear spaces*. [Abstract](#).

##### Papers under revision

1. Marco Zaffalon, Enrique Miranda. *Desirability and the birth of incomplete preferences*. [Abstract](#).
2. Ignacio Montes, Enrique Miranda. *Extreme points of the core of possibility measures and maxitive p-boxes*. [Abstract](#).
3. Arthur van Camp, Gert de Cooman, Enrique Miranda, Erik Quaeghebeur. *Coherent choice functions, desirability and indifference*. [Abstract](#).

**Other research work**

- Master Thesis: *Modelos de Probabilidades Imprecisas para Conjuntos Aleatorios*. Supervised by Inés Couso and Pedro Gil. University of Oviedo, July 2001.
- Graduate Thesis: *Relaciones entre conjuntos aleatorios consonantes y medidas de posibilidad*. Supervised by Inés Couso and Pedro Gil. University of Oviedo, July 2002.

**5. Other research activities.****Editorial work**

1. Co-editor (with J. Lawry, A. Bugarín, S. Li, M.A. Gil, P. Grzegorzewski, O. Hryniewicz) of the book *Soft methods for integrated uncertainty modelling*. 414 pages. Springer, 2006.
2. Co-editor (with H.T. Nguyen) of the special issue on *random sets and imprecise probabilities* for the [International Journal of Approximate Reasoning](#), 46(1), 1-73, 2007.
3. Co-editor (with T. Augustin and J. Vejnarova) of the special issue on *ISIPTA'2007* for the [International Journal of Approximate Reasoning](#), 56(4), 581-694, 2009.
4. Co-editor (with S. Díaz and S. Montes) of the special issue on *EUROFUSE'2013* for [Fuzzy Sets and Systems](#), 278C, 1--118, 2015.
5. Co-editor (with T. Augustin, S. Doria and E. Quaeghebeur) of the [Proceedings of ISIPTA'2015](#). 359 pages. Aracne, 2015.
6. Member of the editorial board of the [Journal of Uncertain Systems](#) and the [International Journal of Approximate Reasoning](#). Formerly in the editorial board of the [ISRN on Probability and Statistics](#).

**Organisation of research activities**

- [2nd SIPTA school on](#) imprecise probabilities. Madrid, July 2006.
- Special sessions on imprecise probabilities at [SMPS'2006](#), [IPMU'2010](#), [IPMU'2012](#), [ERCIM'2012](#), [IPMU'2014](#), [SMPS'2016](#).
- Research kitchen en imprecision modelling in decision analysis within the [COST IC062 action](#). Madrid, November 2007.
- EUROFUSE Workshop on Imprecision and Uncertainty in Preference Modelling and Decision Making ([EUROFUSE'2013](#)). Oviedo, December 2013.
- 9th International Conference on Imprecise Probability: Theories and Applications ([ISIPTA'2015](#)). Pescara, July 2015.

**Some links**

- [SIPTA](#). Homepage of the Society for Imprecise Probabilities and Their Applications, with lots of interesting information and links.
- [The Probability Web](#). Information on journals, conferences, jobs and many other aspects of probability theory.
- [Mathworld](#). Information and mathematical news.
- [MacTutor](#). Website dedicated to the history of Mathematics.
- I have made research stays at the [SYSTeMS Group](#) from Ghent University and at the [IDSIA](#) institute in Lugano.
- I am a member of the [UNIMODE](#) research group at the University of Oviedo.

Homepages of some of my co-authors:

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[Renato Pelessoni](#)  
[Matthias Troffaes](#)  
[Erik Quaeghebeur](#)  
[Arthur van Camp](#)  
[Marco Zaffalon](#)

...And if you've come this far, you may still be wondering why my name is familiar to you. Well, here is [the answer](#), some [testimony](#), and what [Wikipedia](#) says...