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# In memory of Jérôme Monnot

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Jérôme Monnot was 49 when he passed away on December 11, 2019. Researcher at the French National Centre for Scientific Research (CNRS), affiliated to LAMSADE, he communicated all his joy of living during three decades at the university of Paris-Dauphine.

## 1 Short Biography

Jérôme starts studying mathematics and computer science in 1989. He prepares a PhD thesis entitled *Families of critical instances and polynomial approximation* under the supervision of Vangelis Paschos, and defends it in 1998.

After three years spent as an associate researcher, he pursues his career as a research engineer in 2001. His perseverance allows him to obtain a permanent position at the CNRS in 2002, still affiliated to LAMSADE. He obtains very

early his habilitation thesis (2003), still on the topic of polynomial approximation. At the same time, Jérôme participates very actively in a national working group on algorithms with performance guarantees (AGAPE) where he develops his first connections with other French research groups.

In 2012, Jérôme is promoted to Research Director at the CNRS (senior permanent position). He will later admit having achieved his professional goal.

## 2 Presentation of the Special Issue

Passionate about research, Jérôme produced a host of results in several fields. This special issue gathers various works lying in these fields, closely related to Jérôme’s research interests (he is even coauthor of some of them) and illustrating the diversity of his contributions.

As noted above, Jérôme started his career working in approximation algorithms, a topic with which several articles of this special issue deal, such as “Improved Budgeted Connected Domination and Budgeted Edge-Vertex Domination” [14], “Approximation of the Double Traveling Salesman Problem with Multiple Stacks” [1], “Algorithmic aspects of upper edge domination” [15] or “Generalised online colouring problems in overlap graphs ” [4]. He was also interested in approximation algorithms for multi-criteria problems, a topic covered here in the article “Improved bi-criteria approximation schemes for load balancing on unrelated machines with cost constraints” [16].

Jérôme was undoubtedly a fervent fan of graphs, and got deep results linking structural aspects of graphs and their consequences in terms of algorithms, see for example the articles, that he co-authored: “Maximum independent sets in subcubic graphs: New results” [9] and “Strong cliques in diamond-free graphs” [3]. He was strongly interested in computational complexity of graph problems, and very talented at providing sharp limits between tractability and intractability, both from a parameterized viewpoint (see “On the complexity of solution extension of optimization problems” [2]) and from a standard viewpoint (see for instance “Complexity and algorithms for constant diameter augmentation problems” [12] or “On the complexity of independent dominating set with obligations in graphs” [13]). Structural, algorithmic and complexity aspects of graph problems are in the heart of several other articles in this special issue, such as “Blocking total dominating sets via edge contractions” [7], “Recoloring subgraphs of  $K_{2n}$  for sports scheduling” [17], or “Extension and its price for the connected vertex cover problem” [11].

Besides graphs, Jérôme explored several other research areas, providing a wide and strong contribution in the fields of algorithmic game theory and mechanism design, topics illustrated in this special issue by works such as “Reallocating multiple facilities on the line” [6] and “Local fairness in hedonic games via individual threshold coalitions” [10], and in the field of computational social choice, which is considered here in the articles “Efficiency and equity in the multi organization scheduling problem” [5] and “Beyond pairwise comparisons in social choice: A setwise Kemeny aggregation problem” [8].

### 3 Behind the Researcher

Jérôme was suffering of myopathy and he soon had to deal with disability. Traveling and teaching were almost impossible for him, constituting an important obstacle to his academic career. Nevertheless, Jérôme patiently fought against isolation by developing numerous collaborations in France and abroad as evidenced by his long list of co-authors.

Those who worked with him have often praised his scientific qualities, in particular his ability to design complex reductions without the aid of paper and pencil, his curiosity, as well as his in-depth knowledge of his research field. In his office, he conducted many co-working sessions in front of a whiteboard followed by long hours laboriously writing in LaTeX with his special mouse and virtual keyboard.

Sharing was Jérôme’s recipe of professional success: any new problem, any student supervision, any collaboration with a visiting professor were opportunities for him to include other colleagues, in particular the younger. Jérôme had a real appetite for supervision. He supervised or co-supervised four PhD students (Sophie Toulouse, Lydia Tlilane, Mehdi Khosravian Ghadikolaei and Nikolaos Melissinos) and three of them are contributors of the special issue. In addition, many other PhD students at LAMSADE have benefited from his help and expertise.

Jérôme was also very sensitive to the equitable distribution of resources and the good flow of information within the department. According to these principles, he led the *combinatorial optimization and algorithmic* group of LAMSADE, and also took an active part in the scientific council of the university of Paris-Dauphine .

On a more personal level, Jérôme had a lot of humour and self-mockery, a very communicative cheerfulness, and his courage in facing his illness was always attracting admiration. LAMSADE was his second home where, from 2:00 p.m., one could hear the sound of his electric chair and the laughter of his assistant Corinne. In his office, Jérôme was regularly organizing “coffee breaks” where, in a studious or festive atmosphere, researchers, office staff, and students could mingle without any distinction of age or discipline.

Those who have had the chance to know this lover of cinema and chess feel the happiness of having encountered a remarkable person, but also the sadness of his loss. In addition to his numerous publications, the legacy of Jérôme Monnot is his way of being and doing research, in sharing, mutual aid and good humour.

Originally scheduled in 2020, but postponed because of the health crisis, an international conference in honor of Jérôme Monnot was held on December 6, 2021 at the university of Paris-Dauphine<sup>1</sup>.

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<sup>1</sup><https://jm2021.sciencesconf.org>

## List of articles of the S.I. In memory of Jérôme Monnot

- [1] Laurent Alfandari and Sophie Toulouse. Approximation of the double traveling salesman problem with multiple stacks. *Theoretical Computer Science*, 877:74–89, 2021.
- [2] Katrin Casel, Henning Fernau, Mehdi Khosravian Ghadikolaie, Jérôme Monnot, and Florian Sikora. On the complexity of solution extension of optimization problems. *Theoretical Computer Science*, 904:48–65, 2022.
- [3] Nina Chiarelli, Berenice Martínez-Barona, Martin Milanic, Jérôme Monnot, and Peter Mursic. Strong cliques in diamond-free graphs. *Theoretical Computer Science*, 858:49–63, 2021.
- [4] Marc Demange and Martin Olsen. Generalised online colouring problems in overlap graphs. *Theoretical Computer Science*, 877:58–73, 2021.
- [5] Martin Durand and Fanny Pascual. Efficiency and equity in the multi organization scheduling problem. *Theoretical Computer Science*, 864:103–117, 2021.
- [6] Dimitris Fotakis, Loukas Kavouras, Panagiotis Kostopanagiotis, Philip Lazaros, Stratis Skoulakis, and Nikos Zarifis. Reallocating multiple facilities on the line. *Theoretical Computer Science*, 858:13–34, 2021.
- [7] Esther Galby, Felix Mann, and Bernard Ries. Blocking total dominating sets via edge contractions. *Theoretical Computer Science*, 877:18–35, 2021.
- [8] Hugo Gilbert, Tom Portoleau, and Olivier Spanjaard. Beyond pairwise comparisons in social choice: A setwise kemeny aggregation problem. *Theoretical Computer Science*, 904:27–47, 2022.
- [9] Ararat Harutyunyan, Michael Lampis, Vadim Lozin, and Jérôme Monnot. Maximum independent sets in subcubic graphs: New results. *Theoretical Computer Science*, 846:14–26, 2020.
- [10] Anna Maria Kerkmann, Nhan-Tam Nguyen, and Jörg Rothe. Local fairness in hedonic games via individual threshold coalitions. *Theoretical Computer Science*, 877:1–17, 2021.
- [11] Mehdi Khosravian Ghadikolaie, Nikolaos Melissinos, Jérôme Monnot, and Aris Pagourtzis. Extension and its price for the connected vertex cover problem. *Theoretical Computer Science*, 904:66–80, 2022.
- [12] Eun Jung Kim, Martin Milanic, Jérôme Monnot, and Christophe Picouleau. Complexity and algorithms for constant diameter augmentation problems. *Theoretical Computer Science*, 904:15–26, 2022.

- [13] Christian Laforest and Timothée Martinod. On the complexity of independent dominating set with obligations in graphs. *Theoretical Computer Science*, 904:1–14, 2022.
- [14] Ioannis Lamprou, Ioannis Sigalas, and Vassilis Zissimopoulos. Improved budgeted connected domination and budgeted edge-vertex domination. *Theoretical Computer Science*, 858:1–12, 2021.
- [15] Jérôme Monnot, Henning Fernau, and David Manlove. Algorithmic aspects of upper edge domination. *Theoretical Computer Science*, 877:46–57, 2021.
- [16] Trung Thanh Nguyen and Jörg Rothe. Improved bi-criteria approximation schemes for load balancing on unrelated machines with cost constraints. *Theoretical Computer Science*, 858:35–48, 2021.
- [17] Sebastián Urrutia, Dominique de Werra, and Tiago Januario. Recoloring subgraphs of  $k_{2n}$  for sports scheduling. *Theoretical Computer Science*, 877:36–45, 2021.