Tribute to Jérôme Monnot

Jérôme Monnot was member of Pôle 2 (DR CNRS) until his untimely death on December 11, 2019. A tribute to his scientific contribution has been organized by LAMSADE members, especially within Pôle 2. The first element of the tribute is a special issue of the journal *Theoretical Computer Science* dedicated to him. The issue, published online between 2021 and 2022, includes an introduction by the guest editors (Laurent Gourvès, Bruno Escoffier and Vangelis Paschos) [EGP22] and 17 articles for which many researchers of Pôle 2 contributed [KMMP22, SCF$^+$22, KGMMP22, CMBM$^+$21, MFM21, HLLM20].

The second element of this tribute is an international conference held on December 6, 2021 at the university of Paris-Dauphine (originally scheduled in 2020, but postponed because of the health crisis). The conference website is `https://jm2021.sciencesconf.org`. Introduced by the president of Université Paris Dauphine-PSL (El-Mouhoub Mouhoud), Olivier Serre (CNRS INS2I), and Daniela Grigori (Head of LAMSADE), the program of the conference included talks of Bruno Escoffier (Sorbonne Université), Jérôme Lang (CNRS, Université Paris Dauphine-PSL), Dimitris Fotakis (NTUA, Athens), Henning Fernau (Universität Trier), Fanny Pascual (Sorbonne Université), Bernard Ries (Université de Fribourg) and Dominique de Werra (EPFL).

The third element is an article published in the journal of the *Société Informatique de France* [Gou22].

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Introduction

In memory of Jérôme Monnot

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.

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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 coloring 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 humor 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 humor.

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.[1]

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JM2021 : Scientific tribute to Jérôme Monnot
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Jérôme

Jérôme Monnot sadly passed away in December 2019. This event is made to celebrate Jérôme's work.

Jérôme Monnot obtained his Ph.D. in computer sciences en 1998 and his habilitation in 2003, in Paris-Dauphine University. He was recruted as CNRS researcher in 2002 and promoted senior researcher in 2012. We was very dedicated in the LAMSADE life and more particulary in the CombinatoriaI optimization and Algorithmics team, whose he was the head for several years.

With more than 70 co-authors and in more than 100 papers, Jérôme gave great contributions in diverse fields of Theoretical Computer Sciences, including

- Operational research and Combinatorial optimization
- Polynomial approximation and complexity
- Parameterized algorithms and complexity
- Graph theory
- Computational social choice
- Algorithmic game theory
- Multi-Objective optimization

Registration

For external members of Dauphine, **"health pass" is required** for assisting this event. See this page for more information.

Registration open to everyone and free (but mandatory), **before the 22 of November 2021**. Due to logistic

constraint, the number of participants is limited to the first 70 persons.

Scientific talks

Collaborators, former students and close collegues will give scientific talks covering the various research topics of Jérôme, including Bruno Escoffier, Henning Fernau, Dimitris Fotakis, Jérôme Lang, Fanny Pascual, Bernard Ries and Dominique de Werra.

Organizing Comitee

Stéphane Airiau, Joyce El Haddad, Laurent Gourvès, Florian Sikora, Sonia Toubaline

Sponsors

Hommage à Jérôme Monnot

Laurent Gourvès [1]

Repoussée en raison de la crise sanitaire, une conférence internationale en hommage à Jérôme Monnot s'est tenue le 6 décembre 2021 à l'université Paris-Dauphine [2]. *De plus, la revue* Theoretical Computer Science *vient de mettre en ligne un numéro spécial en sa mémoire* [3].

Jérôme Monnot s'en est allé le 11 décembre 2019, à l'âge de 49 ans. Chercheur au CNRS, affecté au laboratoire LAMSADE, Jérôme a communiqué toute sa joie de vivre durant trois décennies à l'université Paris-Dauphine.

Arrivé en 1989 pour entamer un DEUG MASS, il poursuit ses études tout d'abord en génie mathématiques & informatique (licence et maîtrise), puis en méthodes scientifiques de gestion pour son DEA. C'est sous la direction de Vangelis Paschos qu'il soutient en 1998 sa thèse de doctorat en informatique intitulée *Familles d'instances critiques et approximation polynomiale*.

Après trois années passées en qualité de chercheur associé au LAMSADE, il poursuit dans ce même laboratoire son parcours professionnel comme ingénieur de recherche en 2001. Sa persévérance lui permet de décrocher en 2002 un poste de

1. Université Paris-Dauphine, université PSL, CNRS, LAMSADE, Paris.

2. https://jm2021.sciencesconf.org.

3. https://www.sciencedirect.com/journal/theoretical-computer-science/special-issue/10B77W9TTTB.

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chargé de recherche au CNRS. Il soutient très tôt son habilitation à diriger des recherches (2003), toujours sur le thème de l'approximation polynomiale. En parallèle, Jérôme participe très activement au groupe de travail *Algorithmes à garantie de performance* (AGAPE) du GDR RO où il développe ses premières connexions dans l'Hexagone (CNAM, Evry, LIP6, LIPN...).

Passionné par son métier de chercheur, Jérôme a produit une foule de résultats dans des domaines aussi variés que la recherche opérationnelle, l'optimisation combinatoire, l'approximation polynomiale, la complexité et la théorie des graphes. Au gré des projets ANR auxquels il participe, ses thèmes se diversifient davantage pour s'ouvrir à la théorie des jeux algorithmique (ANR COCA), à l'algorithmique et la complexité paramétrées (ANR TODO), à l'optimisation multi-critère (ANR GUEPARD), ainsi qu'au choix social computationnel (ANR COCORICO). C'est en 2012 que Jérôme est promu directeur de recherche au CNRS. Il avouera par la suite avoir atteint son but professionnel.

Atteint de myopathie, Jérôme a dû composer avec le handicap depuis son plus jeune âge. Voyager et enseigner étaient pour lui quasi impossibles, lui fermant de nombreuses portes pour construire sa carrière académique. Néanmoins, Jérôme a patiemment combattu l'isolement en développant de nombreuses collaborations à la fois locales et à l'étranger (Rome La Sapienza, l'EPFL, l'université de Tel Aviv, la *Business School* d'Athènes, l'université de Twente...) comme en atteste sa longue liste de co-auteurs.

Ceux qui l'ont côtoyé ont souvent loué ses qualités scientifiques, notamment sa capacité à concevoir des réductions complexes sans l'aide d'un papier et d'un crayon, sa curiosité, ainsi que sa connaissance fine de son domaine de recherche. Au laboratoire, il multipliait séances de *coworking* devant un tableau blanc et écriture laborieuse en LaTeX avec sa souris si particulière et son clavier virtuel. C'est dans le partage que Jérôme a construit sa réussite professionnelle : tout nouveau problème, tout encadrement d'étudiant, toute collaboration avec un chercheur de passage au LAMSADE étaient pour lui l'occasion d'inclure d'autres collègues, en particulier les plus jeunes [4].

Jérôme avait une réelle appétence pour l'encadrement et a notamment dirigé ou co-dirigé la thèse de quatre doctorants (Sophie Toulouse, Lydia Tlilane, Mehdi Khosravian Ghadikolaei et Nikolaos Melissinos). De plus, nombreux sont les thésards du LAMSADE qui ont pu bénéficier de son aide pour trouver des pistes afin de débloquer un problème ou pour relire leur mémoire.

Jérôme était aussi très sensible à la répartition équitable des ressources et à la bonne circulation de l'information au sein du laboratoire. C'est selon ces principes qu'il a animé le pôle *optimisation combinatoire, algorithmique* du LAMSADE, et aussi pris part activement au conseil scientifique de l'université Paris-Dauphine.

4. Qui est mieux placé que moi pour le dire ? !

Sur un plan plus personnel, Jérôme avait un humour plein d'autodérision, un détachement vis-à-vis de la maladie qui forçait l'admiration, et une joie de vivre très communicative. Le LAMSADE était sa deuxième maison où résonnaient, dès 14h00, le bruit de son fauteuil électrique et les rires de Corinne, son assistante. Dans son bureau, Jérôme organisait régulièrement des « goûters » où, dans une atmosphère, tantôt studieuse, tantôt festive, se mêlaient chercheurs, administratifs, étudiants, sans distinction d'âge et de discipline.

Ceux qui comme moi ont eu la chance de côtoyer cet amoureux de cinéma et du jeu d'échecs restent à mi-chemin entre le bonheur d'avoir croisé un personnage marquant et la tristesse de l'avoir perdu. Outre ses nombreuses publications, l'héritage de Jérôme Monnot est sa façon d'être et de faire de la recherche, dans le partage, l'entraide et la bonne humeur.