Manuel Francesco Aprile

Contact information

Date and place of birth:	23 September 1991, Mascalucia (Italy)
Nationality:	Italian
Email:	manuelf.aprile@gmail.com
Tel.:	+39 3384327987
Web:	`https://sites.google.com/view/manuel-aprile`
Office:	O.8.206, building NO
	Université libre de Bruxelles (ULB)
	Boulevard du Triomphe
	B-1050 Belgium
ORCID:	0000-0002-6805-6903

Research interests

Combinatorial optimization, extended formulations of polytopes, graphs and matroids

Employment

From 2019: Post-doctoral researcher
Mathematics Department, ULB, Belgium

From 2014: PhD Student ("assistant doctorant")
EPFL, Lausanne, Switzerland

Education

2018: Ph.D. in Discrete Optimization
EPFL, Switzerland
Advisor: Prof. Friedrich Eisenbrand
Co-advisor: Prof. Yuri Faenza

2014: M. Sc. in Mathematics and Foundation of Computer Science
University of Oxford, United Kingdom
Advisor: Prof. Colin McDiarmid

2013: B. Sc. in Mathematics, *summa cum laude*
University of Catania, Italy
Advisor: Prof. Giuseppe Nicosia
Co-advisor: Prof. Vittorio Romano

Awards and scholarship

2010-13: Winner of the INdAM (National Institute of High Mathematics)
scholarship to entirely support my Bachelors studies (12.000 €)

Math Olympics:

2010: Bronze Medal at National Contest, Cesenatico, Italy.

2005-09: Selected for the Regional Contest, Sicily, Italy.

2004: Selected for the National Contest, Bocconi University, Milan, Italy.

Physics Olympics:

2007-09: Selected for the Regional Contest, Sicily, Italy.

Teaching		Teaching assistant at ULB:
	Autumn 2019:	"Géométrie convexe et discrète" (Master's level course, in French)
		Teaching assistant at EPFL:
	Spring 2015-2018:	Discrete Optimization
	Fall 2017:	Combinatorial Geometry (Master's level course)
	Fall 2016:	Combinatorial optimization (Master's level course)
	Fall 2015:	Algèbre linéaire (in French)
		Activities on teaching:
	June 2017:	SOTL workshop, Zurich (invited speaker)
	Fall 2016:	Science and Engineering Teaching and Learning (semester course)
	May 2015:	Instructional Skills Workshop (3 days)
	October 2014:	Teaching toolkit for Doctoral Assistants (1 day)

Student supervision	Cslovjecsek Jana:	Master project *"Extension complexity of polytopes"* EPFL, Fall 2018
	Gilbert Maystre:	Master project *"Non-repetitive coloring of line graphs"* EPFL, Spring 2017
	Loris Di Natale:	Bachelor project *"On the mininum rainbow subgraph problem"* EPFL, Fall 2016 (jointly with A. Cevallos)
	Maurice Amendt:	Bachelor project *"Non-repetitive graph coloring"* EPFL, Fall 2015

Professional service Reviewer for journals and internetional conferences, such as: European Journal of Combinatorics, Discrete Mathematics & Theoretical Computer Science, Discrete Applied Mathematics, IPCO (Integer Programming and Combinatorial Optimization).

Publications Not yet published:

- M. Aprile, M. Conforti, Y. Faenza, S. Fiorini, T. Huynh, M. Macchia *Recognizing Cartesian products of matrices and polytopes* https://arxiv.org/abs/2002.02264, 2020.

- M. Aprile, S. Fiorini *Regular matroids have polynomial extension complexity.* https://arxiv.org/abs/1909.08539, 2019.

In conferences with published, peer-reviewed proceedings:

- M. Aprile, Y. Faenza *Extended formulations from communication protocols in output-efficient time* International Conference on Integer Programming and Combinatorial Optimization (IPCO). Springer, Cham, 2019.

- M. Aprile, Y. Faenza, S. Fiorini, T. Huynh, M. Macchia *Extension complexity of stable set polytopes of bipartite graphs* International Workshop on Graph-Theoretic Concepts in Computer Science. Springer, Cham, 2017.

- M. Aprile, N. Castro, F. Robledo, P. Romero *Analysis of Node-Resilience Strategies under Natural Disasters.* International Conference on Design of Reliable Communication Networks, 2017.
- M. Aprile, A. Cevallos, Y. Faenza *On Vertices and Facets of Combinatorial 2-Level Polytopes.* In: R. Cerulli, S. Fujishige, A. Mahjoub (eds) Combinatorial Optimization. ISCO 2016. Lecture Notes in Computer Science, vol 9849. Springer, Cham, 2016.

In journals:
- M. Aprile, Y. Faenza *Extended formulations from communication protocols in output-efficient time* Mathematical Programming B (in revision).
- M. Aprile, A. Cevallos, Y. Faenza *On 2-level polytopes arising in combinatorial settings* SIAM Journal on Discrete Mathematics 32.3, 2018.
- M. Aprile, N. Castro, G. Ferreira, J. Piccini, F. Robledo, P. Romero *Graph fragmentation problem: analysis and synthesis* International Transactions in Operational Research, 2018.

Theses:
- M. Aprile *On some problems related to 2-level polytopes*, Ph.D. thesis, EPFL, 2018.
- M. Aprile *Constructive Aspects of Lovász Local Lemma and Applications to Graph Colouring*, MSc thesis, University of Oxford, 2014.
- M. Aprile *An algorithm for constructing magic squares*, Bachelor thesis, Univesity of Catania, 2013.

Presentations   Workshop on Extended Formulations and Symmetries 2019, Rancagua, Chile (on invitation)

IPCO 2019, Ann Arbor, USA

Cargese Workshop on Combinatorial Optimization (2017-2019), France (on invitation)

Aussois Combinatorial Optimization Workshop (2018-2019), France (on invitation)

DRCN 2017, Munich, Germany

ISCO 2016, Vietri sul Mare, Italy

Languages   Italian (native), English (proficient), French (proficient).