

ATTIVITA' DI RICERCA

Svolgo attività di ricerca nel campo della **teoria dei linguaggi formali** e, più esattamente, mi interesso di problemi algebrici e combinatori delle teorie degli automi, dei linguaggi bidimensionali e dei codici. In particolare ho affrontato le seguenti tematiche:

- Linguaggi bidimensionali di picture:
Riconoscibilità tramite tiling system, espressioni regolari, altri modelli di calcolo
Determinismo, non determinismo, ambiguità
Caso unario
Codici bidimensionali di picture
Insiemi di picture overlap-free
- Linguaggi di stringhe:
Z-codici e z-sottomonoidi
Codici covering
Automi su alfabeti unari
Relazioni razionali e automi multinastro
- Alberi binari:
Riducibilità

Elenco delle pubblicazioni

(Nota: alcune pubblicazioni sono a nome di **Marina** Madonia)

Pubblicazioni su riviste internazionali

[j1] M. Madonia, S. Salemi, T. Sportelli “On z-submonoids and z-codes” *RAIRO Informatique Théorique et Applications*, Vol. 25, n. 4, pp. 305-322 EDP-Sciences (1991).

<https://www.rairoita.org/articles/ita/abs/1991/04/ita1991250403051/ita1991250403051.html>

doi: 10.1051/ita/1991250403051 WOS: A1991GL31900001

[j2] M. Madonia, S. Salemi, T. Sportelli “A generalization of Sardinas-Patterson algorithm to z-codes” *Theoretical Computer Science*, Vol. 108, n. 2, pp. 251-270 Elsevier (1993).

<https://www.sciencedirect.com/science/article/pii/030439759390193W>

doi: 10.1016/0304-3975(93)90193-W WOS:A1993KJ95000003 Scopus: 2-s2.0-0027542029

[j3] M. Madonia, S. Varricchio “Some decisional problems on rational relations” *Theoretical Computer Science*, Vol. 180, pp. 1-15 Elsevier (1997).

<https://www.sciencedirect.com/science/article/pii/S0304397596000989>

doi: 10.1016/S0304-3975(96)00098-9

[j4] M. Madonia, T. Sportelli, S. Salemi “Covering submonoids and covering codes” *Journal of Automata Languages and Combinatorics* Vol. 4, n. 4, pp. 333-350 Otto-von-Guericke-Universität Magdeburg (1999).

https://www.jalc.de/issues/1999/issue_4_4/jalc-1999-333-350.php

doi: 10.25596/jalc-1999-333

[j5] M. Anselmo, D. Giammarresi, M. Madonia “New operations and regular expressions for two-dimensional languages over one-letter alphabet” *Theoretical Computer Science*, Vol. 340, n. 2, pp. 408-431 Elsevier (2005).

<https://www.sciencedirect.com/science/article/pii/S030439750500160X>

doi: 10.1016/j.tcs.2005.03.031 WOS: 000230237600017 Scopus: 2-s2.0-20344396348

[j6] M. Anselmo, M. Madonia “A Language-Theoretic approach to coverings problems” *Journal of Automata Languages and Combinatorics* Vol. 10, n. 1, pp. 3-24 Otto-von-Guericke-Universität Magdeburg (2005).

https://www.jalc.de/issues/2005/issue_10_1/jalc-2005-003-024.php

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[j7] M. Anselmo, D. Giammarresi, M. Madonia, A. Restivo “Unambiguous recognizable two-dimensional languages” **RAIRO-Theoretical Informatics and Applications**, Vol. 40, n. 2, pp. 277-293 EDP-Sciences (2006).

<https://www.rairo-ita.org/articles/ita/abs/2006/02/ita06024/ita06024.html>

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Scopus: 2s2.033746278660

[j8] M. Anselmo, D. Giammarresi, M. Madonia “A Computational Model for Tiling Recognizable Two-dimensional Languages” **Theoretical Computer Science**, Vol. 410, n.37, pp. 3520-3529 Elsevier (2009).

<https://www.sciencedirect.com/science/article/pii/S030439750900231X>

doi: 10.1016/j.tcs.2009.03.016 WOS: 000269304000010 Scopus: 2-s2.0-

67651092187

[j9] M. Anselmo, M. Madonia “Deterministic and Unambiguous Two-dimensional Languages over One-letter Alphabet” **Theoretical Computer Science**, Vol. 410, pp. 1477-1485 Elsevier (2009).

<https://www.sciencedirect.com/science/article/pii/S0304397508008761>

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[j10] M. Anselmo, M. Madonia “Classes of Two-dimensional Languages and Recognizability Conditions” **RAIRO-Theoretical Informatics and Applications**, Vol. 44, n. 4, pp. 471-488 EDP-Sciences (2010).

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[j11] M. Anselmo, D. Giammarresi, M. Madonia “Deterministic and unambiguous families within recognizable two-dimensional languages” **Fundamenta Informaticae**, Vol. 98, n. 2-3, pp. 143-166 (2010).

<https://content.iospress.com/articles/fundamenta-informaticae/fi98-2-3-01>

doi: 10.3233/FI-2010-221 WOS: 000276350300001 Scopus: 2-s2.0-

77949572160

[j12] M. Madonia, G. Scollo “Reducibility and Solvability of Some Classes of Kryuchkov Binary Tree Pairs” **The Electronic Journal of Combinatorics**, Vol. 18, n. 2 (2011).

<https://www.combinatorics.org/ojs/index.php/eljc/article/view/v18i2p32>

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[j13] M. Anselmo, M. Madonia “Some Results on the Structure of Unary Unambiguous Automata” **Advances in Applied Mathematics**, Vol. 47, n. 1, pp. 88-101 (2011).

<https://www.sciencedirect.com/science/article/pii/S0196885810000692>

doi: 10.1016/j.aam.2010.05.003 WOS: 000291506700005 Scopus 2-s2.0-79955823436 (2011)

[j14] M. Anselmo, M. Madonia “A Stronger Recognizability Condition for Two-dimensional Languages”, **Discrete Mathematics and Theoretical Computer Science**, Vol. 15:2, pp. 139–156 (2013).

<http://dmtcs.episciences.org/599>

WOS: 000327033900010 Scopus: 2-s2.0-84883443405 (2013)

[j15] M. Anselmo, D. Giammarresi, M. Madonia “Prefix Picture Codes: a Decidable Class of Two-dimensional codes” **International Journal of Foundations of Computer Science**, Vol. 25(8), pp. 1017-1032 (2014).

<https://www.worldscientific.com/doi/abs/10.1142/S0129054114400218>

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[j16] M. Anselmo, M. Madonia “Two-dimensional Comma-free and Cylindric Codes” **Theoretical Computer Science**, vol. 658(A), pp. 4-17 (2017).

<http://www.journals.elsevier.com/theoretical-computer-science/>

doi: 10.1016/j.tcs.2016.06.016 WOS: 000391904600002 Scopus: 2-s2.0-84998818068

[j17] M. Anselmo, D. Giammarresi, M. Madonia “Non-Expandable Non-Overlapping sets of pictures” **Theoretical Computer Science**, vol. 657, pp. 127-136 (2017).

[https://www.sciencedirect.com/science/article/abs/pii/S030439751630512](https://www.sciencedirect.com/science/article/abs/pii/S0304397516305126)

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[j18] M. Anselmo, D. Giammarresi, M. Madonia “Structure and properties of strong prefix codes of pictures” **Mathematical Structures in Computer Science**, vol. 27 (2), pp. 123-142 (2017).

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[j19] M. Anselmo, D. Giammarresi, M. Madonia “Picture Codes and Deciphering Delay” **Information and Computation**, vol 253, pp. 358-370 (2017).

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[j20] M. Anselmo, D. Giammarresi, M. Madonia “Full sets of pictures to encode pictures” **Theoretical Computer Science**, vol. 777, pp. 55-68 (2019).

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[j21] M. Anselmo, D. Giammarresi, M. Madonia “Sets of Pictures Avoiding Overlaps” **International Journal of Foundations of Computer Science**, vol.30 (6-7), pp. 875-898 (2019).

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[j22] M. Anselmo, D. Giammarresi, M. Madonia “Characterization and Measure of Infinite Two-dimensional Strong Prefix Codes” **Information and Computation**, vol. 274, art. 104536 (2020).

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[j23] M. Anselmo, D. Giammarresi, M. Madonia “A common framework to recognize two-dimensional languages” **Fundamenta Informaticae**, vol. 171(1-4), pp. 1-17, (2020).

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[c23] M. Madonia “Two-dimensional Codes” in M. Anselmo, G. Della Vedova, F. Manea, A. Pauly (Eds.): Proc. *CIE 2020*, **Lecture Notes in Computer Science** vol. 12098, pp. 301–305, Springer (2020).

doi: 10.1007/978-3-030-51466-2_27

[c22] M. Anselmo, D. Giammarresi, M. Madonia, C. Selmi “Bad Pictures: Some Structural Properties Related to Overlaps”, in G. Jirásková and G. Pighizzini (Eds.): Proc. *DCFS 2020*, **Lecture Notes in Computer Science** vol. 12442, Springer (2020).

doi: 10.1007/978-3-030-62536-8_2

[c21] M. Anselmo, M. Madonia, C. Selmi “Toroidal Codes and Conjugate Pictures” in C. Martín-Vide et al. (Eds.): Proc. Int. *Conference on Language and Automata Theory and Applications (LATA'19)*, **Lecture Notes in Computer Science** vol. 11417, pp. 288–301, Springer (2019).

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[c20] M. Anselmo, D. Giammarresi, M. Madonia “Encoding Pictures with Maximal Codes of Pictures”, in A. Min Tjoa et al. (Eds.): Proc. Int. *SOFSEM 2018*, **Lecture Notes in Computer Science** vol. 10706, Springer (2018).

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[c18] M. Anselmo, D. Giammarresi, M. Madonia “Avoiding Overlaps in Pictures”, in G. Pighizzini and C. Câmpeanu (Eds.): Proc. *DCFS 2017*, **Lecture Notes in Computer Science** vol. 10316, Springer (2017).
doi: 10.1007/978-3-319-60252-3_2 WOS: 000440468100002 Scopus: 2-s2.0-85022333003

[c17] M. Anselmo, D. Giammarresi, M. Madonia “Unbordered Pictures: Properties and Construction” in A. Maletti (Ed.): Proc. *CAI 2015*, **Lecture Notes in Computer Science** vol. 9270, pp. 45-57, Springer (2015).
doi: 10.1007/978-3-319-23021-4_5 WOS: 000366086100005 Scopus: 2-s2.0-84949895509

[c16] M. Anselmo, D. Giammarresi, M. Madonia “Structure and Measure of a Decidable Class of Two-dimensional Codes” in Proc. Int. *Conference on Language and Automata Theory and Applications (LATA'15)*, **Lecture Notes in Computer Science** vol. 8977, pp. Springer (2015).
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[c15] M. Anselmo, D. Giammarresi, M. Madonia “Pictures Codes with Finite Deciphering Delay” in A.-H. Dediu et al. (Eds.): Proc. Int. *Conference on Language and Automata Theory and Applications (LATA'14)*, **Lecture Notes in Computer Science** vol. 8370, pp. 88–100, Springer (2014).
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[c14] M. Anselmo, D. Giammarresi, M. Madonia “Strong Prefix Codes of Pictures” in T. Muntean et al. (Eds.): Proc. Int. *Conference on Algebraic Informatics (CAI'13)*, **Lecture Notes in Computer Science** vol. 8080, pp. 47–59, Springer-Verlag Berlin Heidelberg (2013).
doi: 10.1007/978-3-642-40663-8_6 Scopus: 2-s2.0-84884725208

[c13] M. Anselmo, D. Giammarresi, M. Madonia “Two-dimensional Prefix Codes of Pictures” in M.-P. Béal and O. Carton (Eds.): Proc. Int. Conf.

Developments on Language Theory (DLT2013), **Lecture Notes in Computer Science** vol. 7907, pp. 46-57, Springer, Heidelberg (2013).

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E' stato anche **invitato** dal Program Committee alla Special Issue dell' *International Journal of Foundations of Computer Science* sulla conferenza.

[c12] M. Anselmo, D. Giammarresi, M. Madonia “Two-dimensional rational automata: a bridge unifying one- and two-dimensional language theory” in P. van Emde Boas et al. (Eds.): Proc. Int. *SOFSEM 2013*, **Lecture Notes in Computer Science** vol. 7741, pp. 133-145 Springer, Heidelberg (2013).

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[c11] M. Anselmo, M. Madonia “Comparing Necessary Conditions for Recognizability of Two-dimensional Languages” in F. Winkler (Ed.): Proc. Int. *Conference on Algebraic Informatics (CAI'11)*, **Lecture Notes in Computer Science** vol. 6742, pp. 84-96, Springer Heidelberg (2011).

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[c10] M. Anselmo, D. Giammarresi, M. Madonia “Classification of String Languages via Tiling Recognizable Picture Languages” in A.H. Dediu et al. (Eds.): Proc. Int. *Conference on Language and Automata Theory and Applications (LATA'11)*, **Lecture Notes in Computer Science** vol. 6638, pp. 105-116, Springer Heidelberg (2011).

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[c9] M. Anselmo, M. Madonia “A Note on Unambiguity, Finite Ambiguity and Complementation in Recognizable Two-dimensional Languages” in S. Bozapalidis and G. Rahonis (Eds.): Proc. Int. *Conference on Algebraic Informatics (CAI'09)*, **Lecture Notes in Computer Science** vol. 5725, pp. 147-159, Springer-Verlag Berlin (2009).

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[c8] M. Anselmo, N. Jonoska, M. Madonia “Framed versus Unframed Two-dimensional Languages” in M. Nielsen et al. (Eds.): Proc. Int. SOFSEM 2009, **Lecture Notes in Computer Science** vol. 5404, pp. 79-92, 2009. Springer-Verlag Berlin (2009).

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[c5] M. Anselmo, D. Giammarresi, M. Madonia “Tiling automaton: a Computational Model for Recognizable Two-dimensional Languages” in J. Holub and J. Zdarek (Eds.): Proc. Int. Conference on Implementation and Application of Automata (CIAA’07),), **Lecture Notes in Computer Science** vol. 4783, pp. 290-302, 2007. Springer-Verlag, Berlin (2007).

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[c1] M. Madonia, S. Varricchio “Iterative tapes and multitape automata” in H. Kirchner (Ed.): Trees in Algebra and programming Proc. Int. *CAAP'96 Conference*, **Lecture Notes in Computer Science** vol. 1059, pp. 17-29, Springer Verlag, Berlin (1996).
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Comunicazioni a Workshop

M. Anselmo, D. Giammarresi, M. Madonia, A. Restivo “*On ambiguity of two-dimensional languages*” (comunicato al *Workshop on Words and Automata*, San Pietroburgo, Russia (2006)).

M. Anselmo, D. Giammarresi, M. Madonia “Unambiguous recognizable two-dimensional languages” (comunicato al Workshop “*Advances on Two-Dimensional Language Theory*”, Salerno, Italia (2006)).

M. Anselmo, M. Madonia “Some results on unary unambiguous automata”
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