Curriculum – Francesca Tartarone

Personal and Academic Information

Current academic position: Associate Professor of Algebra (01/MATH-02), Roma Tre University, since 1 March 2008.

Affiliation: Roma Tre University
Department of Mathematics and Physics
Largo San Leonardo Murialdo 1, 00146 Rome, Italy.

Email: francesca.tartarone@uniroma3.it

National Scientific Qualification (ASN): Awarded the qualification for Full Professor of Algebra (01/MATH-02) in 2021.

Languages: English and French.

Education and Training

1. 1987 – Scientific high school diploma, final grade 60/60.
2. 1992 – Laurea in Mathematics, Sapienza University of Rome, final grade 110/110 with honours.
3. 1992/93 – Postgraduate scholarship, INdAM (National Institute of Higher Mathematics, CNR).
4. 1993/97 – PhD in Mathematics, Sapienza University of Rome. Thesis: "Dimension theory and multiplicative ideal aspects in the integer-valued polynomial ring".
5. 1997/98 – One-year postdoctoral position, Laboratoire de Mathématiques, Faculté des Sciences de Saint-Jérôme, Université d'Aix-Marseille III, Marseille, France.
6. Mathematics schools:
   - 1996 – "Summer School on Commutative Algebra", Centre de Recerca Matemàtica, Barcelona, Spain.
   - 1999 – "Initial ideals, Gröbner bases and toric degenerations", Nordfjordeid, Norway.

Academic Positions and Qualifications

1. 2008–present – Associate Professor of Algebra (MAT/02), Roma Tre University.
2. 2021 – National Scientific Qualification (ASN) for Full Professor of Algebra (MAT/02).
3. 2006 – Declared eligible for appointment as Associate Professor of Algebra (01/MATH-02) in the selection procedure at the University of Naples Federico II.
4. 2005 – Confirmed in a permanent position as a researcher in Algebra (01/MATH-02).
5. 2002–2008 – Researcher in Algebra (01/MATH-02), Roma Tre University.
6. 2001/2002 – Research fellowship in Algebra (01/MATH-02), Roma Tre University.
7. 1999/2000 – Research fellowship in Algebra (01/MATH-02), University of Trieste.
8. 1998 – Awarded a one-year postdoctoral fellowship at the University of Padua.

Main Visiting Appointments

1. January–June 1995 – Université d'Aix-Marseille III, Marseille, France.
2. January–June 1996 – Florida State University, Tallahassee, Florida, USA.
3. October 1997 – Purdue University, Indiana, USA.
4. 1997/1998 – Université d'Aix-Marseille III, Marseille, France.
5. August–September 1998 – Ohio State University, Columbus, Ohio, USA.
6. March–April 2002 – University of North Carolina at Charlotte, North Carolina, USA.
7. April 2002 – Ohio State University, Columbus, Ohio, USA.
8. June 2003 – Erasmus Teaching Staff mobility, Université d'Aix-Marseille III, Marseille, France.
9. 19–25 April 2008 – Erasmus Teaching Staff mobility, Université d'Aix-Marseille III, Marseille, France.

Research Interests

Commutative algebra. Multiplicative ideal theory and ideal closure operations. Classification of integrally closed and essential domains (Dedekind domains, Prüfer domains, Krull domains, etc.). Rings of integer-valued polynomials over integral domains ($\mathrm{Int}(D) = \{f \in K[X] : f(D) \subseteq D\}$). Divisorial ideals and star operations. Topological aspects of spaces of valuations and prime spectra of rings.

Quaternion algebras.

Selected Invited Conference Talks

1. 17–19 June 1997 – *Krull dimension of Integer-Valued Polynomial Rings on a subset*, Rencontre Internationale d'Algèbre Commutative sur les Polynômes à Valeurs Entières, Université d'Aix-Marseille III, Marseille, France.
2. 8–9 November 1997 – *Multiplicative properties of rings of integer-valued polynomials*, Special Session on Commutative Algebra, 928th Meeting of the American Mathematical Society, Albuquerque, New Mexico, USA.
3. 29 May–2 June 2000 – *Divisorial and t-ideals in the ring of integer-valued polynomials over a valuation domain*, 2nd International Meeting on Integer-Valued Polynomials, Société Mathématique de France, CIRM (Centre International de Rencontres Mathématiques), Marseille, France.
4. 7–12 June 2001 – *Polynomial closure in pseudo-valuation domains*, Fourth International Conference on Commutative Ring Theory and Applications, University of Fez, Morocco.

5. 3–8 June 2002 – *Strong Mori properties of Integer-Valued Polynomial Rings*, Algebra Conference, Venezia 2002, Venice, Italy.
6. 12–16 June 2002 – *Strong Mori properties of Integer-Valued Polynomial Rings II*, First Joint AMS–UMI Meeting, Pisa, Italy.
7. 8–13 September 2003 – *Prüfer overrings of* $\mathbb{Z}[X]$, 17th UMI Congress, Milan, Italy.
8. 31 May–5 June 2004 – *Polynomial Closure in Prüfer and Essential domains*, Cortona 2004 – Commutative Rings and their Modules, Cortona, Italy.
9. 4–10 June 2006 – *Domains in which the operation w is the identity and some relations with Prüfer domains*, Workshop on Commutative Rings, Cortona, Italy.
10. 17–20 September 2007 – *GCD-Bézout Domains*, Workshop on Commutative Rings and their Modules, Bressanone–Brixen, Italy.
11. 23–28 June 2008 – *Integrally closed overrings of* $\mathbb{Z}[X]$, Fifth International Fez Conference on Commutative Algebra and Applications, Fez, Morocco.
12. 18–21 March 2010 – *On star-invertibility of ideals*, First International Conference on Mathematics and Statistics, AUS-ICMS'10, Sharjah, UAE.
13. 19–22 December 2012 – *An ultrafilter characterization of PvMD*, Conference on Commutative Rings, Integer-Valued Polynomials and Polynomial Functions, TU Graz, Austria.
14. 22–26 September 2014 – *When Bhargava rings are PvMD*, Arithmetic and Ideal Theory of Rings and Semigroups, Institute of Mathematics and Scientific Computing, University of Graz, Austria.
15. 3–8 July 2016 – **Plenary speaker**, *Local invertibility and finite character for general ring extensions*, Conference on Rings and Polynomials, TU Graz, Austria.
16. 19–23 February 2018 – *Integer-valued polynomial over quaternion algebras*, Conference on Rings and Polynomials, University of Graz, Austria.
17. 19–25 July 2021 – *Essential properties of Integer-valued polynomial rings*, Conference on Rings and Polynomials, TU Graz, Austria.
18. 12–13 January 2023 – **Plenary speaker**, *Prüfer-like properties for integer-valued polynomial rings*, International E-Conference of Young Researchers in Algebra and Number Theory 2023, Fez, Morocco.
19. 10–14 July 2023 – **Plenary speaker**, *Essential properties of Integer-valued polynomial rings*, Conference on Rings and Factorizations 2023, University of Graz, Austria.
20. 15–19 July 2024 – *Polynomial closures of ideals and star-operations*, 9th European Congress of Mathematics (9ECM), Mini-Symposium "Rings, Modules, and Factorizations", Seville, Spain.
21. 23–26 July 2024 – *Star operations related to Polynomial closure*, AMS–UMI International Joint Meeting 2024, Special Session "The Ideal Theory and Arithmetic of Rings, Monoids, and Semigroups", Palermo, Italy.
22. 23–26 July 2024 – *Star operations related to Polynomial closure*, AMS–UMI International Joint Meeting 2024, Special Session "The Ideal Theory and Arithmetic of Rings, Monoids, and Semigroups", Palermo, Italy.
23. 14–19 July 2025 – *Questions about Int prime ideals*, Conference on Rings and Polynomials, TU Graz, Austria.
24. 9–10 July 2026 – *The ring* $\mathrm{Int}(D)$*: from Prüfer to PvMD*, Conference on Integer-Valued Polynomials and Related Topics, Université de Picardie Jules Verne, Amiens, France.

Conference Organization

- 3 May–5 June 2004 – Cortona 2004 – Commutative Rings and their Modules, Cortona, Italy.

- 4–10 June 2006 – Cortona 2006 – Workshop on Commutative Rings, Cortona, Italy.
- 20–21 May 2010 – Roma 2010 – Commutative Ring Theory Days, Rome, Italy.
- 12–17 September 2011 – 19th UMI Congress, Algebra Session, Bologna, Italy.
- 4–8 June 2012 – Bressanone 2012 – Commutative Rings and their Modules, Bressanone, Italy.
- Bressanone 2016 – Recent Advances in Commutative Ring and Module Theory.
- 12 October 2017 – Scientific Day in Honour of Marco Fontana, Rome, Italy.
- 7–11 December 2020 – Fourth International Meeting on Integer-Valued Polynomials, CIRM, Marseille, France.
- 12–13 January 2023 – International E-Conference of Young Researchers in Algebra and Number Theory 2023, Faculty of Sciences Dhar El Mahraz, Fez, Morocco.
- 11–13 September 2024 – Advances in Commutative Ring Theory, Department of Mathematics and Computer Science, University of Catania, Italy.
- Scientific Committee member, Conference on Rings and Polynomials, TU Graz, Austria (4–19 July 2025).

Other Scientific Activities

- PhD supervision:

  2014 – Antonio Cigliola, Roma Tre University: "Split quaternions, generalized quaternions and integer-valued polynomials".

  2024 – Elisa Paglia, Roma Tre University, ongoing.

- PhD thesis reviewer/examiner:
  - 2015 – "Generalized normal subgroups in infinite groups", Caterina Rainone, University of Naples Federico II.
  - 2015 – "Groups with normality conditions on systems of subgroups", Maria Martusciello, University of Naples Federico II.
  - 2017 – "Characterizations of Perinormal Rings with Zero Divisors", Anam Rani, Lahore University, Pakistan.
  - 2018 – "Shannon extensions of regular local rings. Lefschetz properties for Gorenstein graded algebras", Lorenzo Gerrieri, University of Catania.
  - 2019 – "Arf Good Semigroups", Giuseppe Zito, University of Catania.
  - 2020 – "Double covering of curves and duplication of semigroups and rings", Alessandra Licata, University of Catania.
  - 2022 – "The nearly Gorenstein property for numerical duplications and semitrivial extensions", Danny Troia, University of Palermo.
  - 2022 – "Topics in calculus and geometry on metric spaces", Vincenzo Palmisano, University of Palermo.
- 2022 – Selection Committee member for a fixed-term researcher position (RTDa), University of Genoa.
- Since 2022 – Member of the Cryptography and Cybersecurity Laboratory, Department of Mathematics and Physics.
- Referee for international journals, including *Communications in Algebra*, *Journal of Commutative Algebra*, and *Journal of the London Mathematical Society*, and for Springer monographs.
- Reviewer of national research proposals (SIR Programme).
- Editor of a special issue of *Communications in Algebra* 43 (2015), no. 1.

- Editor of the Springer volume *Rings, Polynomials, and Modules* (2017).
- Since July 2021 – Editor of *Journal of Mathematics* (Wiley).
- Editor of the Springer Nature volume *Rings and Polynomials* (2026).

Publications

PhD thesis – *Dimension theory and multiplicative ideal aspects in the integer-valued polynomial ring* (1997).

Articles published in international journals or conference proceedings

1. F.T., *On the Krull dimension of* Int(D) *when D is a pullback*, Commutative Ring Theory II, Lecture Notes Pure Appl. Math., Marcel Dekker **185** (1997), 457-476.
2. M. Fontana - L. Izelgue - S. Kabbaj - F.T.,*On the Krull dimension of domains of Integer-Valued Polynomials*, Expositiones Math. **15** (1997), 433 - 465.
3. F.T., *Integer-valued polynomials over Krull-type domains and Prüfer v-multiplication domains*, Proc. Amer. Math. Soc. **128** (2000), 1617 - 1625.
4. S. Gabelli - F.T., *On the class group of integer-valued polynomial rings over Krull domains*, J. Pure Appl. Algebra **149** (2000), 47 - 67.
5. F.T., *Divisorial prime ideals of* Int(D) *when* D *is a Krull-type domain*, Comm. Algebra **28, n. 10** (2000), 4647 - 4663.
6. P.-J. Cahen - A. Loper - F.T. *Integer-valued polynomials and Prüfer v-multiplication domains*, J. Algebra **226** (2000), 765 - 787.
7. P.-J. Cahen - J.L. Chabert - D. Dobbs - F.T., *On locally divided domains of the form Int(D)*, Archiv der Mathematik **74** (2000), 181 - 193.
8. M. Fontana - L. Izelgue - S. Kabbaj - F.T., *Polynomial closure in essential domains and pullbacks*, Advances in Commutative Ring theory, Lecture Notes Pure Appl. Math., Marcel Dekker **205** (2000), 307 - 321.
9. P.J. Cahen - E. Houston - F.T., *The t- and v- spectra of the ring of integer-valued polynomials over a valuation domain*, Ideal theoretic methods in commutative algebra, Lecture Notes in Pure and Appl. Math., Marcel Dekker **220** (2001), 109 - 117.
10. S. Gabelli - F.T., *Complete integral closure and the Noetherian property for the integer-valued polynomial rings*, Commutative Ring Theory and Applications, Lecture Notes Pure Appl. Math., Marcel Dekker **231** (2003), 173-189.
11. M.H. Park - F.T., *Strong Mori and Noetherian properties of integer-valued polynomial rings*, J. Pure Appl. Algebra **186, no.3** (2004), no. 3, 297-309.
12. F.T., *Polynomial closure in essential domains*, Manuscripta Math. **117, no.1** (2005), 29-41.
13. G. Picozza - F.T., *When the semistar operation $\tilde{\star}$ is the identity*, Comm. Algebra **36, no. 5** (2008), 1954–1975.
14. K.A. Loper - F.T., *A classification of the integrally closed rings of polynomials containing $\mathbb{Z}[X]$*, J. Commut. Algebra **1, no.1** (2009), 91-157.
15. G. Picozza - F.T., *Flat ideals and stability in integral domains*, J. Algebra **324, no.8** (2010), 1790-1802.
16. C.A. Finocchiaro - G. Picozza - F.T., *Star-invertibility and t-finite character in integral domains*, J. Algebra Appl. **10, no.10** (2011), 755-769.
17. M.H. Park - F.T., *Divisibility properties related to star-operations on integral domains*, Int. Electron. J. Algebra **12** (2012), 53-74.

18. B. Olberding - F.T., *Integrally closed rings in birational extensions of two-dimensional regular local rings*, Math. Proc. Cambridge Philos. Soc. **155 , no. 1**(2013), 101-127.

19. C.A. Finocchiaro - F.T., *On a topological characterization of Prüfer v-multiplication domains among essential domains*, J. Commut. Algebra **8, no.4** (2016), 513-536.

20. C.A. Finocchiaro - F.T., *Invertibility of ideals in Prüfer extensions*, Comm. Algebra **45, no. 10** (2017), 4521-4527.

21. C.A. Finocchiaro - F.T., *A survey on the local invertibility of ideals in commutative rings*, Advances in rings, modules and factorizations, 153-168, Springer Proc. Math. Stat., 321, Springer, Cham, (2020).

22. M.H. Park- F.T., *Bhargava rings that are Prüfer v-multiplication domains*, J. Algebra Appl. **19, no. 5** (2020)

23. A. Cigliola - D. Spirito, Dario - F.T., *Multiplicative properties of integer valued polynomials over split-quaternions*, Comm. Algebra *49, no. 3* (2021), 1338-1351.

24. A. Tamoussit - F.T., *On weakly-Krull domains of integer-valued polynomials*, Ricerche di Matematica (2022), to appear.

25. C.A. Finocchiaro - M. D'Anna - F.T., *On quotients of Rees algebras*, J. Pure Appl. Algebra 227(1) (2023), Paper No. 10715.

26. A. Tamoussit - F.T., *Essential properties for rings of integer-valued polynomials*, New York J. Math. 29 (2023), 467–487.

27. C.A. Finocchiaro - F.T., *A survey on essential-like properties of Prüfer v-multiplication domains*, Algebraic, Number Theoretic, and Topological Aspects of Ring Theory, Springer, Cham, (2023), 187–195.

28. D. Spirito - F.T., *Star operations related to polynomial closure* Comm. Algebra 52 (2024), no. 9, 3686–3693.

29. A. Tamoussit - F.T., *On weakly-Krull domains of integer-valued polynomials Tamoussit*, Ric. Mat. 73 (2024), no. 4, 1937–1944.

30. A. Tamoussit - F.T., *Essential-like properties for integer-valued polynomial rings: a survey with a note on valuation domains*, Recent progress in ring and factorization theory, Springer Proc. Math. Stat., 477 Springer, Cham, (2025), 417–428.

31. C.A. Finocchiaro - F.T., *On a class of quotients of Rees algebras: a survey Recent progress in ring and factorization theory*, Springer Proc. Math. Stat., 477 Springer, Cham, (2025), 229–239.

Preprints

- A. Cigliola - F.T., *Jordan centralizer of quaternion algebras*;

- C.A. Finocchiaro - F.T, *Intersections of rational valuation domains and Prüfer v-multiplication rings*;

- M. D'Anna - F.T., *Polynomial closure - like operations on numerical semigroups and applications to numerical semigroup rings*

Teaching

- Over the past 15 years, I have taught at least two courses per academic year in the Bachelor's and Master's degree programmes in Mathematics at Roma Tre University, drawn from the following:

    - Algebra 1: Foundations of Algebra;
    - Algebra 2: Groups, Rings and Fields;
    - Field Theory and Galois Theory;

  - Introduction to Number Theory;
  - Public-Key Cryptography;
  - Group Theory;
  - Commutative Algebra (also offered as a PhD course);
  - Elementary Algebra from an Advanced Standpoint (an algebra course for prospective teachers).
- October 2020 – PhD course "The Ring of Integer-Valued Polynomials", Scuola Superiore di Catania.
- Since 2002 – Supervisor of more than 30 Bachelor's and Master's theses.
- June 2019 and 2021 – Participation in the "Professione Ricercatore" (The Research Profession) Mathematics Summer School at the Department of Mathematics and Physics.

University Service at Roma Tre University

- Since 2016 – Member of the Review Group for the Mathematics degree programmes and contact person for the Master's degree programme in Mathematics.
- January 2022–October 2024 – Coordinator of the degree programmes in Mathematics (Bachelor's, L-35), Mathematics (Master's, LM-40), and Computational Sciences (Master's, LM-40).
- January 2022–October 2024 – Member of the Department Executive Committee.
- Since 2013 – Member of the Teaching Committee for the degree programmes in Mathematics and Computational Sciences (for the latter, since 2016). Responsibilities include CISIA entrance tests, the subcommittee on study plans, admissions and transfers, and the Quality Committee.
- Since 2003 – Member of the Student Guidance Committee for the Mathematics degree programmes.
- November 2020 – Member of the working group preparing for the CEV evaluation visit for the Master's degree programme in Mathematics (LM-40).
- 2015 – Committee member for the University Conference on Teaching.
- 2006–2021 – Member of the Scientific Degrees Project (PLS), a European project aimed at strengthening links between secondary schools and universities in science education. Activities included:
  - 2006 – Participation in the *Astromatematica* workshop at the Aristotele State Scientific High School, Rome.
  - 2008 and 2017 – Coordinator of a *Public-Key Cryptography* workshop at the Aristotele and Virgilio State Scientific High Schools, Rome.

Public Engagement at Roma Tre University

- October 2026 – Participation in Maker Faire as a representative of the Department of Mathematics and Physics, Roma Tre University.
- Participation on several occasions in "Professione Ricercatore", a PCTO programme for upper-secondary school students.
- Since 2012 – Participation in European Researchers' Night, with talks and cryptography workshops for children.
- January 2020 – Organization of a masterclass in Public-Key Cryptography at the Department of Mathematics and Physics.
- June 2019 – Participation in the "Occhi sulla Luna" (Eyes on the Moon) event at the Department of Mathematics and Physics.
- December 2017 – Participation in the "Occhi su Giove" (Eyes on Jupiter) event at the Department of Mathematics and Physics.
- June 2019 – Guest contribution on Public-Key Cryptography to the programme *Sputnik*, Radio Roma Tre.

Participation in Research Projects and Groups

- PRIN 2008–2010 – New trends in the study of abstract Zariski–Riemann surfaces of valuation rings; ideal factorizations in Prüfer domains, Krull star operations and applications.
- 2012–2014 – International Research and Advanced Training Network in Logic, University Internationalization Research Project.
- 2006–2021 – Scientific Degrees Project (Piano Lauree Scientifiche).