

Andrea T. Ricolfi

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EMPLOYMENT HISTORY & EDUCATION

Abilitazione Nazionale I fascia	10 Jul 2025 –
Assistant Professor (rtd-B) at SISSA	Jul 2022 – Sept 2024
Assistant Professor (rtd-B) at Università di Bologna	Sept 2021 – June 2022
Postdoc at SISSA, Trieste (<i>SISSA Mathematical Fellowship</i>)	Nov 2018 – Sept 2021
Postdoc at Max-Planck Institut für Mathematik, Bonn	Nov 2017 – Oct 2018
PhD in Mathematics at University of Stavanger (UiS Norway)	Sept 2013 – Oct 2017
Thesis (10 Nov 2017): <i>Local Donaldson–Thomas invariants and their refinements</i>	
Trial Lecture: <i>Symmetric obstruction theories and Joyce’s perverse sheaves</i>	
M.S. in Mathematics (ALGANT Program: Padova & Bordeaux 1)	Oct 2010 – Jul 2012

VISITS AND SCHOLARSHIPS

Imperial College London Visiting PhD (P.I. Prof. Richard Thomas)	Feb 2015 – June 2015
University of Copenhagen 4 short term visits (P.I. Prof. Lars H. Halle)	2015 – 2017
SISSA One month Research Scholarship	June 2013

RESEARCH INTERESTS

Enumerative geometry of moduli spaces of sheaves • Hilbert and Quot schemes, Donaldson–Thomas invariants, virtual classes, virtual localisation • Moduli stacks, quiver representations, d-critical loci, derived algebraic geometry • Grothendieck rings of varieties • Hall algebras • Moduli spaces of curves, compactified Jacobians

SUPERVISION

PhD students	Defense date
◦ Luca Morstabilini (SISSA), co-supervised with Prof. F. Sala.	ongoing
◦ Nicolò Bignami (SISSA), co-supervised with Prof. A. Marian.	ongoing
◦ Andrea Grossutti (SISSA), co-supervised with Prof. M. Del Zotto.	ongoing
◦ Solomiya Mizyuk (SISSA), co-supervised with Prof. B. Fantechi.	ongoing
• Michele Graffeo (SISSA), co-supervised with Prof. U. Bruzzo.	25 Nov 2022
Master students	Defense date
• Lorenzo Palcic (Università di Trieste)	17 Jul 2025
• Riccardo Redigolo (Università di Trieste), co-supervised with Prof. B. Fantechi.	12 Jul 2024

CONFERENCE ORGANISATION

<i>The geometry of Hilbert schemes of points</i> (Levico Terme)	6–10 May 2024
<i>Quiver Representations, Quiver Varieties and Combinatorics</i> (Bologna)	22–26 May 2023
<i>Refined invariants in moduli theory</i> (SISSA and UNITS)	2–5 May 2023
<i>Moduli spaces: theory and coding</i> (Les Diablerets)	27 Feb – 3 Mar 2023
<i>Derived Categories and Moduli Spaces</i> , local organiser (Stavanger)	8–10 Sept 2015

Published papers

27. *Indecomposability of derived categories in families*, with F. Bastianelli, P. Belmans and S. Okawa. J. Geom. Phys., Vol. **217**, 105600 (2025).
26. *On the stack of 0-dimensional coherent sheaves: motivic aspects*, with B. Fantechi. Bull. Lond. Math. Soc., Vol. **57**, No. 6, 1607–1649 (2025).
25. *Hyperquot schemes on curves: virtual class and motivic invariants*, with S. Monavari. Math. Ann., Vol. **392**, No. 2, 1665–1709 (2025).
24. *The geometry of double nested Hilbert schemes of points on curves*, with M. Graffeo, P. Lella, S. Monavari and A. Sammartano. Trans. Amer. Math. Soc. (2025).
23. *On the stack of 0-dimensional coherent sheaves: structural aspects*, with B. Fantechi, 2024. To appear in *Moduli, Motives and Bundles New Trends in Algebraic Geometry*. London Mathematical Society Lecture Note Series: 499.
22. *A sign that used to annoy me, and still does*. J. Geom. Phys., Vol. **125**, 105032 (2024).
21. *The d-critical structure on the Quot scheme of points of a Calabi–Yau 3-fold*, with M. Savvas. Commun. Contemp. Math., Vol. **415**, No. 8, 1–45 (2024).
20. *On the Behrend function and the blowup of some fat points*, with M. Graffeo. Adv. Math., Vol. **415** (2023), 108896.
19. *Hilbert squares of degeneracy loci*, with E. Fatighenti, F. Meazzini, G. Mongardi. Rend. Circ. Mat. Palermo (2), **72**, 3153–3183 (2023).
18. *On the motive of the nested Quot scheme of points on a curve*, with S. Monavari. Journal of Algebra, Vol. **610**, 99–118 (2022).
17. *Sur la lissité du schéma Quot ponctuel emboîté*, with S. Monavari. Canad. Math. Bull., Vol. **66**, Issue 1, March 2023, pp. 178–184.
16. *Framed sheaves on projective space and Quot schemes*, with A. Cazzaniga. Math. Z. **300**, 745–760 (2022).
15. *Framed motivic Donaldson–Thomas invariants of small crepant resolutions*, with A. Cazzaniga. Math. Nachr. Vol. **295**, Issue 6 (2022), 1096–1112.
14. *Higher rank motivic Donaldson–Thomas invariants of \mathbb{A}^3 via wall-crossing, and asymptotics*, with A. Cazzaniga and D. Ralaivaosaona. Math. Proc. Cambridge Philos. Soc., Vol. **174**, Issue 1, January 2023, pp. 97–122.
13. *Higher rank K-theoretic Donaldson–Thomas theory of points*, with N. Fasola and S. Monavari. Forum Math. Sigma, Vol. **9** E15 (2021) 1–51.
12. *The equivariant Atiyah class*. C. R. Math. Acad. Sci. Paris., Vol. **359**, Issue 3 (2021), 257–282.
11. *On the motive of the Quot scheme of finite quotients of a locally free sheaf*. J. Math. Pures Appl., **144** (2020), 50–68.
10. *Virtual classes and virtual motives of Quot schemes on threefolds*. Adv. Math., Vol. **369**, 107182 (2020).
9. *The local motivic DT/PT correspondence*, with B. Davison. J. Lond. Math. Soc., Vol. **104**, Issue 3, 1384–1432 (2021).
8. *Virtual counts on Quot schemes and the higher rank local DT/PT correspondence*, with S. Beentjes. Math. Res. Lett., Vol. **28**, no. 4 (2021), 967–1032.

7. [Pullbacks of universal Brill–Noether classes via Abel–Jacobi morphisms](#), with N. Pagani and J. van Zelm. Math. Nachr., Vol. **293**, Issue 11 (2020), 2187–2207.
6. [The Hilbert scheme of hyperelliptic Jacobians and moduli of Picard sheaves](#). Algebra Number Theory **14**, No. 6 (2020), 1381–1397.
5. [Jet bundles on Gorenstein curves and applications](#), with L. Gatto. J. Singul. Volume **21** (2020), 50–83.
4. [The DT/PT correspondence for smooth curves](#). Math. Z. **290** (2018), no. 1-2, 699–710.
3. [On coherent sheaves of small length on the affine plane](#), with R. Moschetti. J. Algebra, **516** (2018), pp. 471–489.
2. [Local contributions to Donaldson–Thomas invariants](#). Int. Math. Res. Not. IMRN, **2018** (2018), no. 19, 5995–6025.
1. [The Euler characteristic of the generalized Kummer scheme of an Abelian threefold](#), with M. Gulbrandsen. Geom. Dedicata, **182** (2016), Issue 1, pp. 73–79.

Preprints

1. [Invariants of nested Hilbert and Quot schemes on surfaces](#), with N. Fasola, M. Graffeo, D. Lewański, 2025.
2. [Enumeration of partitions via socle reduction](#), with M. Graffeo, S. Monavari, R. Moschetti, 2025.
3. [Derived hyperquot schemes](#), with S. Monavari, E. Pavia, 2024.
4. [The motive of the Hilbert scheme of points in all dimensions](#), with M. Graffeo, S. Monavari, R. Moschetti, 2024.
5. [Motivic classes of noncommutative Quot schemes](#), 2023.
6. [Moduli spaces of semiorthogonal decompositions in families](#), with P. Belmans and S. Okawa, 2020. With an appendix coauthored with W. Lowen.

Books

1. [An Invitation to Modern Enumerative Geometry](#), Springer, SISSA Lecture Series, Vol. 3 (2022).

TALKS AT INTERNATIONAL CONFERENCES AND WORKSHOPS

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| – Modern Methods in Moduli
<i>The motive of the Hilbert scheme of points</i> | Nov 2024 |
| – From Schubert Calculus to Representation Theory (Aracaju, Brazil)
<i>The motive of the Hilbert scheme of points</i> | Sept 2024 |
| – Categorified Enumerative Geometry and Representation Theory (EPFL, Lausanne)
<i>Structures on the Quot scheme of points of a Calabi–Yau 3-fold</i> | Sept 2023 |
| – Higher Structures in Geometry and Mathematical Physics (IHP, Paris - online)
<i>d-critical structure(s) on the Quot scheme of points of a Calabi–Yau 3-fold</i> | June 2023 |
| – IV Congresso Brasileiro de Jovens Pesquisadores (João Pessoa, Brazil)
<i>Higher rank K-theoretic Donaldson–Thomas theory</i> | Oct 2022 |
| – Young Researchers Meeting in Algebra and Geometry 2022 (SISSA, Trieste)
<i>A tale of two d-critical structures</i> | Sept 2022 |
| – Bandoleros 2022 (Ankara, online)
<i>A tale of two d-critical structures</i> | May 2022 |
| – Grothendieck ring and Derived category: a gathering (Turin)
<i>A motivic wall-crossing formula</i> | Apr 2022 |
| – Bandoleros 2021 (Campinas, online)
<i>Virtual invariants of Quot schemes on 3-folds</i> | Feb 2021 |
| – HMI Workshop on Gauge theory and virtual invariants (Dublin)
<i>Virtual classes and virtual motives of Quot schemes on 3-folds</i> | May 2019 |

– Workshop in Algebraic Geometry (Milan) <i>A higher rank local DT/PT correspondence</i>	Dec 2018
– Algebraic Geometry and Foliations: Vainsencher 70 (Belo Horizonte, Brazil) <i>A component of the Hilbert scheme of hyperelliptic Jacobians</i>	Nov 2018
– Motives of Calabi–Yau manifolds (Kraków) <i>A motivic wall-crossing formula for sheaves on 3-folds</i>	May 2018
– A Fall Meeting in Algebraic Geometry and related topics (Turin) <i>The DT/PT correspondence for smooth curves</i>	Oct 2017
– National Algebra meeting (Oslo) <i>Local contributions to DT invariants</i>	Nov 2016
– National Algebra meeting (Oslo) <i>Critical loci and their virtual motives</i>	Nov 2015
– Moduli Spaces and Derived Categories (Warwick) <i>Partitions and generalized Kummer varieties</i>	Feb 2015
– GAel XXII (SISSA) <i>Motivic DT invariants</i>	June 2014
– National Algebra meeting (Oslo) <i>Limits of special Weierstrass points</i>	Nov 2013

SELECTED SEMINAR TALKS

– <i>The motive of the Hilbert scheme of points</i> (University of Utrecht)	Apr 2024
– <i>Geometry of Hilbert schemes, and the two numbers $+1, -1$</i> (Politecnico di Milano)	Apr 2023
– <i>Quot schemes and their d-critical structure(s)</i> (Firenze)	Mar 2023
– <i>Enumerative invariants of Quot schemes and their virtual refinements</i> (ICTP)	Feb 2023
– <i>Quot schemes and their d-critical structure(s)</i> (Pisa)	Nov 2022
– <i>Quot schemes and their d-critical structure(s)</i> (Bonn)	Nov 2022
– <i>K-theoretic sheaf counting</i> (Genova)	May 2022
– <i>A motivic DT/PT correspondence</i> (EPFL, Lausanne)	May 2022
– <i>Refined invariants of moduli spaces</i> (Math. Colloquium , João Pessoa, Brazil)	Apr 2022
– <i>Refined sheaf counting</i> (Trento)	Feb 2022
– <i>Sheaf counting and Quot schemes</i> (Milan)	Nov 2021
– <i>d-critical structure(s) on the Quot scheme of points on a 3-fold</i> (CMSA Harvard)	Oct 2021
– <i>The d-critical structure on the Quot scheme of points on a 3-fold</i> (SISSA)	May 2021
– <i>Refinements of higher rank DT invariants</i> (KIAS Seoul, remote)	May 2021
– <i>Higher rank motivic DT invariants</i> (SISSA)	Feb 2021
– <i>Higher rank K-theoretic Donaldson–Thomas theory of points</i> (Kansas, remote)	Oct 2020
– <i>Higher rank K-theoretic Donaldson–Thomas theory of points</i> (Bologna)	Oct 2020
– <i>A moduli space of semiorthogonal decompositions</i> (Rutgers New Jersey, remote)	Sept 2020
– <i>Higher rank K-theoretic Donaldson–Thomas theory of points</i> (UCSD, remote)	Apr 2020
– <i>Moduli of semiorthogonal decompositions</i> (Stavanger)	Nov 2019
– <i>A motivic DT/PT correspondence via Quot schemes</i> (Oxford)	Nov 2019
– <i>Virtual invariants of Quot schemes on 3-folds</i> (Copenhagen)	May 2019
– <i>A component of the Hilbert scheme of hyperelliptic Jacobians</i> (Rome)	Apr 2019
– <i>Curve counting via Quot schemes</i> (Utrecht University)	Dec 2018
– <i>Le schéma de Hilbert d’une Jacobienne hyperelliptique</i> (Nancy)	Oct 2018
– <i>The DT/PT correspondence for smooth curves</i> (University of Edinburgh)	Jan 2018
– <i>The DT/PT correspondence for smooth curves</i> (KTH, Stockholm)	Nov 2017
– <i>Counting rational curves on toric 3-folds</i> (Copenhagen)	Feb 2016
– <i>Families of Abel–Jacobi curves</i> (Turin)	Dec 2015
– <i>Curve counting on threefolds</i> (Bergen)	Oct 2015
– <i>Introduction to Motivic Integration</i> (Imperial College London)	Apr 2015
– <i>Refined curve counting on Calabi–Yau 3-folds</i> (KU Leuven)	Mar 2015
– <i>Localisation in Donaldson–Thomas theory</i> (UCL, London)	Feb 2015
– <i>A Hamilton’s Principle in Algebraic Geometry</i> (Turin)	Dec 2014
– <i>Curve Counting and Box Counting</i> (Turin)	June 2014
– <i>Curve Counting Invariants and Euler Characteristics</i> (Bergen)	Feb 2014

TEACHING

<i>Algebraic Geometry</i> (50h, 2 nd Year Master Università di Trieste and SISSA PhD)	Fall 2024
<i>Algebraic Geometry</i> (60h, 2 nd Year Master Università di Trieste and SISSA PhD)	Fall 2023
<i>Algebraic Geometry</i> (60h, 2 nd Year Master Università di Trieste and SISSA PhD)	Fall 2022
<i>Geometria e Algebra T</i> (60h, Ingegneria Chimica e Biochimica, Bologna)	Fall 2021
<i>Localisation in Enumerative Geometry</i> (20h, SISSA PhD course)	Spring 2021
<i>Techniques in Enumerative Geometry</i> (20h, SISSA PhD course)	Fall 2019
<i>Algebraic Geometry MAT630</i> (40h, Master course, University of Stavanger)	Spring 2017
<i>Mathematical Methods 2 MAT200</i> (T.A. Bachelor, University of Stavanger)	Spring 2016
<i>Linear Algebra MAT110</i> (T.A. Bachelor, University of Stavanger)	Fall 2015
<i>Discrete Mathematics MAT120</i> (40h, Bachelor course, University of Stavanger)	Fall 2014
<i>Geometria e Algebra Lineare</i> (T.A. Bachelor, Politecnico di Torino)	Spring 2013

OTHER TASKS

Member of <i>Commissione Didattica</i> (SISSA)	1 July 2024–
Member of <i>Collegio dei docenti di Dottorato</i> (SISSA)	1 July 2022–
Organiser of SISSA AG Seminar , TRINO and SISSA-ICTP Quot Seminar	1 Oct 2022–