

## CURRICULUM VITAE

**Name:**

Ragni PIENE

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**Born:**

18 January, 1947, Oslo, Norway

**Education:**

1976 Ph.D., Massachusetts Institute of Technology, USA

1972 M. Sc. (Cand.real.), University of Oslo, Norway

1970 D.E.A., Université de Paris (Orsay), France

1969 B. Sc. (Cand. mag.), University of Oslo, Norway

**Positions:**

1987– Professor, University of Oslo

1979–1986 Assoc. professor, University of Oslo

**Visiting positions:**

Institut Mittag-Leffler, Djursholm; MSRI, Berkeley; École Normale Supérieure, Paris; Bunting Institute/Harvard University; Université de Grenoble; Universidad Federal de Pernambuco, Recife; Institut des Hautes Études Scientifiques, Bures; École Polytechnique, Palaiseau; Massachusetts Institute of Technology.

**Honors:**

2020– Chevalière de l'Ordre des Palmes académiques

2013– Fellow of the American Mathematical Society

2012– Member of the Academia Europaea

2004– Member of the Royal Norwegian Society for Sciences and Letters

1994– Member of the Norwegian Academy of Science and Letters

**Selected invited lectures**

Invited plenary speaker MEGA, Tromsø 2021

Invited plenary speaker (EMS speaker) Caucasian Mathematics Conference, Rostov-on-Don, Russia 2019

Invited plenary speaker Brazilian Meeting of Mathematical Women, Rio de Janeiro, Brazil 2019

Invited plenary speaker SIAM Applied Algebraic Geometry, Atlanta, Georgia, USA 2017

Invited plenary speaker British Mathematical Colloquium, Sheffield 2013  
Invited speaker 1<sup>st</sup> European Congress of Mathematics, Paris 1992  
Invited plenary speaker 21<sup>st</sup> Nordic Congress of Mathematicians, Luleå 1992  
Invited speaker 19<sup>th</sup> Nordic Congress of Mathematicians, Reykjavik 1984

**Committees/boards (present):**

2020–2024 Chair of the Scientific Council of the Fondation Mathématique Jacques Hadamard  
2015–2025 Member of the Heidelberg Laureate Forum Foundation Council

**Committees/boards (past):**

2013–2021 Member of the Scientific Advisory Board of the Mathematisches Forschungsinstitut Oberwolfach  
2008–2021 Member of the EMS/EWM Scientific Committee  
2020 Chair of the committee for the Algebraic Geometry Prize of the Foundation Compositio Mathematica  
2018–2020 Chair of the Viggo Brun Prize committee  
2017–2020 Member of the Scientific Council of the Fondation Mathématique Jacques Hadamard  
2019 Member of the Mathematics Panel of the Research Evaluation for Development, University of Gothenburg  
2019 Member of the Review Panel for the Distinguished Professor Grant (Swedish Research Council)  
2018 Member of the Mathematics Panel for Chalmers Assessment of Research  
1996–2019 Member of the editorial board of *Communications in Algebra*  
2009–2018 Member of the Scientific Advisory Board of the Berlin Mathematical School  
2012–2017 Member of the Scientific Advisory Board of RICAM, Austria  
2005–2016 Member of the Scientific Council of CIMPA  
2012–2015 Member of the Scientific Committee for the EPDI  
2010–2014 Chair of the Abel Committee  
2011–2014 Member of the Commission for Developing Countries of IMU  
2011–2013 Member of the Orientation Council of INSMI, CNRS, France  
2008 Member of the Visiting Committee, Université Pierre et Marie Curie – Paris 6  
2003–2010 Member of the Executive Committee of the International Mathematical Union  
2000 Member of the Prize Committee of the 3rd European Congress of Mathematics  
1995–99 Member of the Standing Committee of European Women in Mathematics  
1994–98 Member of the editorial board of *Astérisque*  
1994–97 Vice Dean, Faculty of Mathematics and Natural Sciences, University of Oslo

**Research interests:**

Algebraic Geometry, in particular enumerative geometry and intersection theory, singularities, moduli spaces, toric varieties; algebraic methods in computer aided geometric design, real algebraic curves and surfaces.

**EU Networks**

Partner in the following EU networks:

- 1) GAIA (Applications of approximate algebraic geometry in industrial computer aided geometry) IST–FET (2000–2001)
- 2) GAIA II (Intersection algorithms for geometry based IT-applications using approximate algebraic methods) FET–OPEN (2002–2005)

### 3) SAGA (ShApes, Geometry and Algebra) FP7– ITN (2008–2012)

#### Publications

- 1) “Faisceaux plats et purs sur la base: un théorème de finitude,” *C. R. Acad. Sc. Paris*, 274 (1972), 194–197.
- 2) “Courbes sur un trait et morphismes de contraction,” *Math. Scand.* 35 (1974), 5–15.
- 3) “Plücker formulas,” Ph.D.Thesis, Massachusetts Institute of Technology, 1976.
- 4) “Numerical characters of a curve in projective space”, In *Real and complex singularities*, Oslo 1976 (ed. P.Holm), Sijthoff & Noordhoff, Groningen 1977, 475–495.
- 5) “A proof of Noether's formula for the arithmetic genus of an algebraic surface,” *Compositio Math.* 38 (1979), 113–119.
- 6) “Polar classes of singular varieties,” *Ann.scient.Éc.Norm.Sup.* 11 (1978), 247–276.
- 7) “Some formulas for a surface in  $P^3$ ,” *Algebraic Geometry, Tromsø 1977* (ed. L. Olson), Springer LNM 687 (1978), 197–235.
- 8) “Cycles polaires et classes de Chern pour les variétés projectives singulières,” *Séminaire sur les singularités des surfaces (Demazure–Pinkham–Teissier)*, École Polytechnique, Palaiseau 1977/78. In *Introduction à la théorie des singularités*, (ed. Lê Dung Tráng), Hermann, Paris 1988, 7–34.
- 9) “Ideals associated to a desingularization,” *Algebraic Geometry, Copenhagen 1978* (ed. K. Lønsted), Springer LNM 732 (1979), 503–517.
- 10) “A geometric approach to the arithmetic genus of a projective manifold of dimension three” (with F. Ronga), *Topology* 20 (1981), 179–190.
- 11) “Cuspidal projections of space curves,” *Math. Ann.* 256 (1981), 95–119.
- 12) “Degenerations of complete twisted cubics,” *Progress in Math.* 24, Birkhäuser 1982, 37–50.
- 13) “A note on higher order dual varieties, with an application to scrolls,” *Proc. Symp. Pure Math.* 40 (1983), 335–341.
- 14) “Duality for rational normal scrolls” (with G. Sacchiero), *Comm. in Algebra* 12(9) (1984), 1041–1066.
- 15) “On the Hilbert scheme compactification of the space of twisted cubics” (with M. Schlessinger), *American J. of Math.* 107 (1985), 761–774.
- 16) “Some intrinsic and extrinsic characterizations of projective space” (with W. Fulton, S. Kleiman, H. Tai), *Bull. Soc. Math. France* 113 (1985), 205–210.
- 17) “On the problem of enumerating twisted cubics,” *Algebraic Geometry Sitges 1983* (eds. E. Casas-Alvero, G. E. Welters, S. Xambo-Descamps), Springer LNM 1124 (1985), 329–337.
- 18) “On the variety of nets of quadrics defining twisted cubics” (with G. Ellingsrud, S. Strømme), *Space Curves, Proc. Rocca di Papa 1985* (eds. F. Ghione, C. Peskine, E. Sernesi), Springer LNM 1266 (1987), 84–96.
- 19) “Espacios tangentes, espacios osculantes y variedades duales,” (Notes by J. Finat), *Publ.Inst. "Jorge Juan" de Matematicas*, Madrid 1985 (71 pages).
- 20) “A characterization of balanced rational normal scrolls in terms of their osculating spaces” (with H. Tai), *Enumerative Geometry, Sitges 1987* (ed. S. Xambo-Descamps), Springer LNM 1436 (1990), 215–224.
- 21) “On the inseparability of the Gauss map” (with S. Kleiman), *Proc. Zeuthen Symposium, Copenhagen 1989* (eds. S. Kleiman, A. Thorup), *Contemp. Math.* 123, Amer. Math. Soc. 1991, 107–129.

- 22) “Duality for elliptic normal surface scrolls” (with R. Mallavibarrena), in Proc. Zeuthen Symposium, Copenhagen 1989 (eds. S. Kleiman, A. Thorup), *Contemp. Math.* 123, Amer. Math. Soc. 1991, 149–160.
- 23) “A characterization of balanced rational normal surface scrolls in terms of their osculating spaces II” (with E. Ballico and H. Tai), *Math. Scand.* 70 (1992), 204–206.
- 24) “On the enumeration of algebraic curves – from circles to instantons,” in First European Congress of Mathematics, Volume II, *Prog. in Math.* 120, Birkhäuser 1994, 327–353.
- 25) “Projective algebraic geometry in positive characteristic,” in *Analysis, Algebra and computers in Mathematical Research*, Proc. 21. Nordic Congress of Mathematicians (eds. M. Gyllenberg, L. E. Persson), Marcel Dekker 1994, 263–273.
- 26) “Arithmetically Cohen-Macaulay curves of degree 4 and genus 0 in  $P^4$ ” (with M. Martin-Deschamps), *Manuscripta Math.* 93 (1997), 391–408.
- 27) “From conic sections to quantum cohomology — An introduction to enumerative algebraic geometry,” in *Selected topics in mathematics*, Luleå University of Technology, 1997, 85–100.
- 28) “Enumerating singular curves on surfaces” (with S. Kleiman), *Proc. Algebraic Geometry Conference Hirzebruch 70*, Warsaw 1998, *Contemp. Math.* 241, Amer. Math. Soc. 1999, 209–238.
- 29) “On the use of parameter and moduli spaces in curve counting,” in *EWM Workshop on Moduli spaces in mathematics and physics* (eds. F. Kirwan, S. Paycha, Tsou Sheung Tsun), Hindawi 2001, 55–64.
- 30) “Node polynomials: methods and applications” (with S. Kleiman), *Math. Nachr.* 271 (2004), 69–90.
- 31) “Singularities of some projective rational surfaces.” *Computational methods for Algebraic Spline Surfaces* (eds. T. Dokken, B. Jüttler), Springer-Verlag 2004, 171–182.
- 32) “Inflectional loci of scrolls” (with A. Lanteri and R. Mallavibarrena), *Math. Z.* 258 (2008), 557–564.
- 33) “Monoid hypersurfaces” (with P. H. Johansen and M. Løberg), in *Geometric Modeling and Algebraic Geometry* (eds. B. Jüttler, R. Piene), Springer-Verlag 2008, 55–77.
- 34) “Polars of real singular plane curves” (with H. Mork), in *Algorithms in Algebraic Geometry*, IMA Volumes in Mathematics and its Applications, Vol. 146, Springer Science+Business 2008, 99–115.
- 35) “Classifying regular lattice polytopes via toric fibrations” (with A. Dickenstein and S. Di Rocco). *Adv. Math.* 222 (2009), no. 1, 240–254.
- 36) “Enriques diagrams, arbitrarily near points, and Hilbert schemes” (with S. Kleiman), *Rend. Lincei Mat. Appl.* 22 (2011), 4:41–451.
- 37) “Inflectional loci of scrolls over smooth, projective varieties” (with A. Lanteri and R. Mallavibarrena), *Indiana Univ. Math. J.* 61 (2012), 2:717–750.
- 38) “Higher order dual varieties and toric embeddings” (with A. Dickenstein and S. Di Rocco), *Ann. Inst. Fourier* 64 (2014), 1:375–400.
- 39) “Inflectional loci of quadric fibrations” (with A. Lanteri and R. Mallavibarrena), *J. Algebra* 441 (2015), 363–397.
- 40) “Algebraic spline geometry – some remarks”, in *SAGA – Advances in ShApes, Algebra, Geometry and Algorithms* (eds. T. Dokken, G. Muntingh), *Geometry and Computing* 10, Springer-Verlag 2014, 169–175.
- 41) “Polar varieties revisited”, in *Computer Algebra and Polynomials* (eds. J. Gutierrez, J. Schicho, M. Weimann), LNCS Vol. 8942, Springer-Verlag 2015, 139–150.

- 42) “Discriminants, polytopes, and toric geometry”, in *Mathematics in the 21<sup>st</sup> Century* (eds. P. Cartier, A.D.R. Choudary, M. Waldschmidt), Springer Proc. Math. & Stat. 98, Springer-Verlag 2015, 151–162.
- 43) “Chern–Mather classes of toric varieties,” arXiv:1604.02845.
- 44) “Higher order selfdual toric varieties” (with A. Dickenstein), *Annali di Matematica Pura ed Applicata* (2017), 196:1759—1777.
- 45) “Higher order polar and reciprocal polar loci,” in *Facets of Algebraic Geometry – A Collection in honor of William Fulton’s 80th Birthday*, Volume 2. Cambridge University Press (2022), 238–253.
- 46) “Adjoints and canonical forms of polypols” (with K. Kohn, K. Ranestad, F. Rydell, B. Shapiro, R. Sinn, M.-S. Sorea, S. Telen), arXiv:2108.11747.
- 47) “Return of the evolute” (with C. Riener and B. Shapiro), arXiv:2110.11691.
- 48) “Node polynomials for curves on surfaces” (with S. Kleiman), *SIGMA* 18 (2022), 059, 23 pages.

#### **Books edited:**

- 1) “The legacy of Niels Henrik Abel” (coeditor with O. A. Laudal), Springer-Verlag 2004.
- 2) “Algebraic Geometry and Geometric Modeling” (coeditor with M. Elkadi and B. Mourrain), Springer-Verlag 2006.
- 3) “Geometric Modeling and Algebraic Geometry” (coeditor with B. Jüttler), Springer-Verlag 2008.
- 4) “The Abel Prize 2003–2007 – The First Five Years” (coeditor with H. Holden), Springer-Verlag 2010.
- 5) “The Abel Prize 2008–2012” (coeditor with H. Holden), Springer-Verlag 2014.
- 6) “The Abel Prize 2013–2017” (coeditor with H. Holden), Springer-Verlag 2018.

#### **Interviews:**

- 1) “The numbers game” (Stephen Battersby), *New Scientist*, 27.09.2003.
- 2) “Interview with Ragni Piene” (Ulf Persson), *EMS Newsletter*, March 2018, 17–22.