

## ALLEGATO A

UNIVERSITÀ DEGLI STUDI DI MILANO

Procedura di selezione per la chiamata a professore di I fascia da ricoprire ai sensi dell'art. 18, comma 1, della Legge n. 240/2010 per il settore concorsuale 01/A2 - GEOMETRIA E ALGEBRA,  
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## [Nome e cognome] CURRICULUM VITAE

INFORMAZIONI PERSONALI (NON INSERIRE INDIRIZZO PRIVATO E TELEFONO FISSO O CELLULARE)

|                 |  |
|-----------------|--|
| COGNOME         | <u>OESTVAER</u>                          |
| NOME            | <u>PAUL ARNE</u>                         |
| DATA DI NASCITA | [ Giorno, mese, anno ] <u>15.08.1973</u> |

INSERIRE IL PROPRIO CURRICULUM  
(non eccedente le 30 pagine)

Data

2.8.2015

Luogo

OSLO



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## Personal Data:

Born August 15, 1973. Norwegian Citizen.

PhD Thesis: Algebraic  $K$ -Theory; Arithmetic and Geometry. Awarded *His Majesty the King's Gold Medal*, 2000.

## Selected Positions Held:

- Project leader, The Centre for Advanced Study (CAS) at the Norwegian Academy of Science and Letters, 2020/2021.

### *Motivic Geometry*

- Visiting Professor, Isaac Newton Institute for Mathematical Sciences, Spring 2020.

### *Algebraic Cycles and Motivic Homotopy Theory*

- Nelder Visiting Fellow, Department of Mathematics of Imperial College London. June - July 2018.

### *Nelder Visiting Fellowships*

- Visiting Professor, SFB 1085 Higher Invariants, University of Regensburg. September 2017.

### *Interactions between Arithmetic Geometry and Global Analysis*

- Visiting Professor, Hausdorff Research Institute for Mathematics, Bonn. May - August 2017.

### *K-theory and related fields*

- Scientific organizer, Institut Mittag-Leffler, The Royal Swedish Academy of Sciences, Stockholm. January - April 2017.

### *Algebro-geometric and homotopical methods*

- Visiting Professor, University of Duisburg-Essen. April - July 2014.

### *Faculty of Mathematics of the University of Duisburg-Essen*

- Visiting Professor, Massachusetts Institute of Technology. January - December 2012.

### *MIT Mathematics*

- Abel Chair 2010, IMUB, Institut de Matemàtica, Barcelona. June - July 2010.

### *Institute of Mathematics of the University of Barcelona*

- Visitor, Tata Institute of Fundamental Research, Mumbai. March 2010.

### *School of Mathematics, TIFR*

- Scientific Researcher, The Fields Institute, Toronto. January - July 2007.

### *Fields Institute for Research in Mathematical Sciences*

- Member of School of Mathematics, IAS, Princeton. January - July 2005, February 2010.

### *Institute for Advanced Study*

- Full Professor, University of Oslo, September 2007 - . Associate Professor, January 2005 - September 2007.

### *Department of Mathematics, UiO*

- Mathematisches Forschungsinstitut Oberwolfach. Research in Pairs Program, May 2003.

### *MFO, Oberwolfach*

## Selected Awards and Grants:

- Radboud Excellence Initiative Professor, 2019-20.  
*Radboud Excellence Initiative, Radboud University and Radboud University Medical Center.*
- Professor Ingerid Dal og søster Ulrikke Greve Dals prize for excellent research in the Humanities, NOK 200K, 2019.  
*Professor Ingerid Dal og søster Ulrikke Greve Dals legat til støtte av humanistisk forskning*
- Nelder Visiting Fellowship, £5K, Department of Mathematics of Imperial College London. June - July 2018.  
*Nelder Visiting Fellowships*
- Bessel Research Prize, €45K, Alexsander von Humboldt Stiftung, 2017.  
*Friedrich Wilhelm Bessel Research Award*
- Frontier Research Group Project, €2300K, funded by The Norwegian Research Council and University of Oslo, 2016 - 2021.  
*Motivic Hopf equations*
- Topology in Norway, research project funded by The Norwegian Research Council, 2012 - 2015.
- Mobility research grant funded by The Norwegian Research Council, 2012.  
*Leiv Erikson mobility programme*

## Selected Scientific Talks:

- Musings on hermitian  $K$ -theory. Max Karoubi's 80th birthday conference, Institut Henri Poincaré, November 2018.
- A motivic Segal conjecture for the group of order two. Motivic homotopy theory and refined enumerative geometry at the University of Duisburg-Essen, May 2018. Seminar, KTH, Stockholm, May 2018. Motives and their applications, Euler International Mathematical Institute in Saint Petersburg, September 2018.
- Motivic Landweber exact theories and étale cohomology. Algebraic  $K$ -Theory and Arithmetic at the Polish Academy of Sciences in Bedlewo, August 2017. Workshop on Etale and Motivic Homotopy Theory 2017 at the University of Heidelberg, September 2017. Oberseminar at University of Duisburg-Essen, November 2017. Motives in Tokyo, 60th birthday conference of Shuji Saito, Tokyo, March 2018.
- The motivic 1-line. Workshop on motivic homotopy groups of spheres II, Universität Duisburg-Essen, June 2016. Topology seminar, University of Copenhagen, November 2016.
- Motivic Hopf Equations. Colloquium talk, Universität Osnabrück, April 2016.
- $A^1$ -contractible varieties. Die Jahrestagung der Deutschen Mathematiker-Vereinigung (DMV), Universität Hamburg, September 2015. Universität de Barcelona, December 2015. NRW Topology meeting, April 2016. University of Stockholm, March 2017. Conference, Hausdorff Research Institute for Mathematics, Bonn, May 2017. Oberseminar on Arithmetische und Algebraische Geometrie, at the Mathematisches Institut der Universität München, October 2017. Seminar, Oxford University, July 2018. London Mathematical Society and Clay Mathematics Institute Research School on Homotopy Theory and Arithmetic Geometry: Motivic and Diophantine Aspects, Imperial College, July 2018. The Norwegian Mathematical Society 100th anniversary conference, September 2018.
- Motivic homotopies - for fun and profit. Lecture Series, Universität Duisburg-Essen, July, 2014.
- Homotopy theory of  $C^*$ -algebras. Topology Seminar, Universität Münster, July, 2013.
- Computations in motivic topology. Seminar, Rutgers University, November, 2012.
- Motivic slices and the graded Witt ring. Seminar, Ohio State University, October, 2012. Seminar, MIT, September, 2012.
- Milnor's conjecture on quadratic forms. Algebraic K-theory and Its Applications, 70th Birthday of Aderemi Kuku, Nanjing, March 17, 2011. 15. NRW Topology Meeting, Wuppertal, May 6, 2011. Structured Ring Spectra - TNG, Hamburg, August 1, 2011. Seminar, USC, California, November, 2012. Seminar, Osnabrück, July, 2013. Seminar, Universität Münster, July, 2013. University of Liverpool, July 2015. Nordic Topology Meeting, Stockholm, August 2015.



- Rigidity and the conjecture of Friedlander and Milnor. Summer School, Regensburg, August, 2011.
- Motives and the Milnor conjecture. Summer School, Paris, June, 2011.
- Motivic invariants of the rational numbers. Motives and Homotopy Theory of Schemes, Mathematisches Forschungsinstitut Oberwolfach, May 2010. Algebraic Topology Seminar, Princeton University, February 2010. Arithmétique et Géométrie algébrique, Paris 13, January 2010.

### Recent Administrative Experience:

Project leader, The Centre for Advanced Study (CAS) at the Norwegian Academy of Science and Letters, 2020/2021.

Member of Scientific Committee for the National Mathematicians Meeting 2020.

Member of UiO organizing committee for the BFS project

*Pure Mathematics in Norway*

Scientific organizer, Institut Mittag-Leffler, The Royal Swedish Academy of Sciences, Stockholm, 2017.

Chair of Section on Algebra, Geometry and Topology, Department of Mathematics, Oslo, 2017 - .

PI of “Frontier Research Group Project”, funded by The Norwegian Research Council and University of Oslo.

Member of the Board of CMA, Center of Excellence, Oslo, 2013 - .

Chair of the Mathematics Section, Oslo, 2009 - 2012.

Member of the Board of the Department of Mathematics, Oslo, 2009 - 2012, 2013 - 2016.

### Recent Service:

Organizer of IHES Summer School, on Motivic, equivariant, and non-commutative homotopy theory. July 2020.

*Institut des Hautes Études Scientifiques, Summer schools*

Member of the Scientific Committee, National Meeting of Mathematicians, 2020.

Organizer of Workshop, Institut Mittag-Leffler. May 2019.

*Institut Mittag-Leffler, Stockholm*

Organizer of Summer School and Conference, Homotopy Theory Summer Berlin. June 2018.

*Homotopy Theory Summer Berlin*

Member of the Prize Committee to select the winners of the 2018  $K$ -theory Prizes.

*$K$ -theory Prize Committee*

Elected Member of the  $K$ -theory Foundation, 2017 -

*$K$ -theory Foundation*

Session organizer at the 27th Nordic Congress of Mathematicians, Stockholm, March 16-20, 2016.

*Topology and Geometry*

Member of the Deutsche Forschungsgemeinschaft review panel for the CRC/Transregional Collaborative Research Centre (TRR) 45 proposed by the Universities of Bonn, Duisburg-Essen and Mainz, 2015.

*Periods, Moduli Spaces and Arithmetic of Algebraic Varieties*

Editor for *Mathematica Scandinavica*, 2013 - .

*Mathematica Scandinavica*

Coeditor of “Abel Symposium 2007” with Nils Baas, Eric Friedlander and Bjørn Jahren. Springer-Verlag.

*Algebraic Topology, The Abel Symposium 2007*

Guest coeditor of The Journal of  $K$ -Theory for conference proceedings of “Motivic Homotopy Theory”, with Eric Friedlander and Gereon Quick. Cambridge University Press.

Scientific project reviewer in the evaluation of research projects financed by: Swiss National Science Foundation, Switzerland, 2012, 2017. NSA Mathematical Science Grant Program (NSA), USA, 2012. The Romanian National Council for Scientific Research, Romania, 2015. The German Academic Exchange Service (DAAD), Germany, 2016. London Mathematical Society Research Workshop Grant Proposal, 2016, 2017. Shanti Swarup

Bhatnagar Prize for Science and Technology, 2016. Heisenberg Programme, German Research Foundation (DFG), Grant proposal, 2017. Dynasty Foundation Scholarships, commissioned by P. Deligne and V. Vassiliev, 2012. The Excellence Initiative IMB (Bourgogne) et LMB (Franche-Comté), 2017.

Referee for “Acta Mathematica”, “Advances in Mathematics”, “Algebra & Number Theory”, “Algebraic and Geometric Topology”, “American Journal of Mathematics”, “Annales Scientifiques de L’Ecole Normale Supérieure”, “Annals of  $K$ -Theory” “Annals of Mathematics Studies Series, Princeton University Press” “Communications in Algebra”, “Compositio Mathematica”, “Documenta Mathematica”, “Duke Mathematical Journal”, “Fields Institute Communications”, “Forum of Mathematics, Sigma”, “Geometry and Topology”, “Inventiones Mathematicae”, “Journal of Algebra”, “Journal of the American Mathematical Society”, “Journal of the Institute of Mathematics of Jussieu”, “Journal of Homotopy and Related Structures”, “Journal of Pure and Applied Algebra”, “Journal of Topology”, “Les Annales de la Faculté des Sciences de Toulouse”, “Mathematische Annalen”, “Mathematische Zeitschrift”, “Memoirs of American Mathematical Society”, “The Journal of  $K$ -Theory” and international publishing companies.

External examiner: Shane Kelly’s PhD defense at Paris 13, 2012. Philip Herrmanns’s PhD defense at Universität Osnabrück, 2012. Torleif Veen’s PhD defense at University of Bergen, 2013. Joe Baldeon’s PhD defense at University of Liverpool, 2015. Charanya Ravi’s PhD defense at School of Mathematics, Tata Institute of Fundamental Research, Mumbai, 2016.

Scientific reviewer: Promotion to full professor at University of Bergen, Norway, 2012. Promotion to associate professor at TIFR, Tata Institute for Fundamental Research, India, 2012. Promotion to associate professor with tenure in the Department of Mathematics at the University of Kentucky, USA, 2018.

### Contributions in Media:

Comments in newspaper article “Ligningen det tok 350 år å løse”, Aftenposten Historie, 2016.  
Researcher portrait interview, The Faculty of Sciences and Mathematics, University of Oslo, 2014.

### Post Docs and Students:

Postdocs: Charanya Ravi, PhD TIFR Mumbai, 2016-2018. Glen Wilson, PhD Rutgers University, 2016-2018. Markus Spitzweck, PhD University of Bonn, 2009 - 2011 (long term collaborator and Professor at Universität Osnabrück). Three PhD students and ten Masters Degree students graduated. Former student Kristian Moi has been a postdoc at University of Münster, Hausdorff Center for Mathematics, MPI Bonn, and currently at KTH Stockholm. Current PhD students: Håkon Kolderup, Jonas Irgens Kylling, Sabrina Pauli.

### Publications

For more details, follow the link

*MathSciNet*

- The first stable homotopy groups of motivic spheres. *Annals of Mathematics* 189 (2019), no. 1, 1-74. Joint with O. Röndigs and M. Spitzweck.
- Topological comparison theorems for Bredon motivic cohomology. *Transactions of the American Mathematical Society* 371 (2019), no. 4, 2875-2921. Joint with J. Heller and M. Voineagu.
- Cellularity of hermitian  $K$ -theory and Witt-theory. In  *$K$ -theory*, vol. 19, 35-40. Tata Institute of Fundamental Research Publications (2018). Joint with O. Röndigs and M. Spitzweck.
- The motivic Hopf map solves the homotopy limit problem for  $K$ -theory. *Documenta Mathematica* 23 (2018), 1405-1424. Joint with O. Röndigs and M. Spitzweck.
- Vanishing in stable motivic homotopy sheaves. *Forum of Mathematics, Sigma* (2018), vol. 6, 1-20. Joint with K. Ormsby and O. Röndigs.
- Rigidity for equivariant pseudo pretheories. *J. Algebra* 516 (2018), 373-395. Joint with J. Heller and C. Ravi.
- The motivic Steenrod algebra in positive characteristic. *Journal of the European Mathematical Society* 19 (2017), 3813-3849. Joint with M. Hoyois and S. Kelly.



- Two-complete stable motivic stems over finite fields. *Algebraic and Geometric Topology* (2017), no. 17, 1059-1104. Joint with G. M. Wilson.
- $A^1$ -contractibility of Koras-Russell threefolds. *Algebraic Geometry* 3 (2016), no. 4, 407-423. Joint with M. Hoyois and A. Krishna.
- The multiplicative structure on the graded slices of hermitian  $K$ -theory and Witt-theory. *Homology Homotopy Appl.* 18 (2016), no. 1, 373-380. Joint with O. Röndigs.
- Slices of hermitian  $K$ -theory and Milnor's conjecture on quadratic forms. *Geometry & Topology* 20 (2016), no. 2, 1157-1212. Joint with O. Röndigs.
- Motivic homotopy theory of group scheme actions. *Journal of Topology* 8 (2015), no. 4, 1202-1236. Joint with J. Heller and A. Krishna.
- Existence and uniqueness of  $E_\infty$  structures on motivic  $K$ -theory spectra. *J. Homotopy Related Structures* 10 (2015), 333-346. Joint with N. Naumann and M. Spitzweck.
- Equivariant cycles and cancellation for motivic cohomology. *Documenta Mathematica* 20 (2015), 269-332. Joint with J. Heller and M. Voineagu.
- The homotopy fixed point theorem and the Quillen-Lichtenbaum conjecture in hermitian  $K$ -theory. *Advances in Mathematics* 278 (2015), 34-55. Joint with J. Berrick, M. Schlichting and M. Karoubi.
- Stable motivic  $\pi_1$  of low-dimensional fields, *Advances in Mathematics* 265 (2014), 97-131. Joint with K. Ormsby.
- $K$ -theory and mapping spaces: an appendix to "Equivariant semi-topological  $K$ -homology and a theorem of Thomason". *J. K-Theory* 13 (2014), 1-8.
- Motivic Brown-Peterson invariants of the rationals. *Geometry & Topology* 17 (2013), no. 3, 1671-1706. Joint with K. Ormsby.
- Hermitian periodicity and cohomology of infinite orthogonal groups. *J. K-Theory* 12 (2013), no. 1, 203-211. Joint with J. Berrick and M. Karoubi.
- Motivic slices and coloured operads. *J. Topology* 5 (2012), 727-755. Joint with J. J. Gutierrez, O. Röndigs and M. Spitzweck.
- Nisnevich descent for  $K$ -theory of Deligne-Mumford stacks. *J. K-Theory* 9 (2012), 291-331. Joint with A. Krishna.
- Motivic twisted  $K$ -theory. *Algebraic and Geometric Topology* 12 (2012), 565-599. Joint with M. Spitzweck.
- Periodicity of hermitian  $K$ -groups. *J. K-Theory* 7 (2011), 429-493. Joint with J. Berrick and M. Karoubi.
- Hermitian  $K$ -theory of totally real 2-regular number fields. *Mathematische Annalen* 349 (2011), 117-159. Joint with J. Berrick and M. Karoubi.
- Homotopy theory of  $C^*$ -algebras. *Frontiers in Mathematics*, Birkhäuser, 2010.
- Universality of mod  $p$  cohomology. *Topology and its Applications* 157 (2010), 2864-2872. Joint with M. Spitzweck.
- Homotopy theory of cyclic presheaves. *Math. Scand.* 107 (2010), 30-42. Joint with S. Seteklev.
- Motivic strict ring models for  $K$ -theory. *Proc. Amer. Math. Soc.* 138 (2010), 3509-3520. Joint with M. Spitzweck and O. Röndigs.
- A Bott inverted model for equivariant unitary topological  $K$ -theory. *Math. Scand.* 106 (2010), 211-216. Joint with M. Spitzweck.
- Rigidity for equivariant  $K$ -theory. *C. R. Math. Acad. Sci. Paris* 347 (2009), 1403-1407. Joint with S. Yagunov.
- Motivic Landweber exactness. *Documenta Mathematica* 14 (2009) 551-593. Joint with N. Naumann and M. Spitzweck.
- Chern classes,  $K$ -theory and Landweber exactness over nonregular base schemes. In *Motives and Algebraic Cycles: A celebration in Honor of Spencer J. Bloch*, Fields Institute Communications 56 (2009), 307-317. Joint with N. Naumann and M. Spitzweck.
- The Bott inverted infinite projective space is  $K$ -theory. *Bull. London Math. Soc.* 41 (2009), 281-292. Joint with M. Spitzweck.
- Modules over motivic cohomology. *Advances in Mathematics* 219 (2008), 689-727. Joint with O. Röndigs.

- Rigidity in motivic homotopy theory. *Mathematische Annalen* 341 (2008), 651-675. Joint with O. Röndigs.
- Nordfjordeid Lectures: Motivic homotopy theory. in: *Motivic Homotopy Theory*, 147-220, Universitext Series in Mathematics, Springer-Verlag, 2007. Joint with O. Röndigs and V. Voevodsky.
- Rigidity for pseudo pretheories. *Invent. Math.* 166 (2006), 95-102. Joint with A. Rosenschon.
- Motives and modules over motivic cohomology. *C. R. Math. Acad. Sci. Paris* 342 (2006), 751-754. Joint with O. Röndigs.
- Descent for  $K$ -theories. *J. Pure Appl. Algebra* 206 (2006), 141-152. Joint with A. Rosenschon.
- The homotopy limit problem for two-primary algebraic  $K$ -theory. *Topology* 44 (2005), 1159-1179. Joint with A. Rosenschon.
- $K$ -theory of surfaces at the prime 2. *K-Theory* 33 (2005), 215-250. Joint with A. Rosenschon.
- On  $A(X) \rightarrow TC(X)$  for some  $X$ . *K-Theory* 31 (2004), 345-355.
- The homotopy type of two-regular  $K$ -theory. *Categorical Decomposition Techniques in Algebraic Topology* (Isle of Skye, 2001), *Progress in Mathematics* 215, 167-178 (2004), Birkhäuser. Joint with L. Hodgkin.
- Higher algebraic wild kernels at the prime 2. *Acta Arithmetica* 112 (2004), 109-130.
- Motivic functors. *Documenta Mathematica* 8, 489-525 (2003). Joint with B. I. Dundas and O. Röndigs.
- Enriched functors and stable homotopy theory. *Documenta Mathematica* 8, 409-488 (2003). Joint with B. I. Dundas and O. Röndigs.
- A norm principle in higher algebraic  $K$ -theory. *Bull. London Math. Soc.* 35 (2003), 491-498.
- $K$ -Theory of curves over number fields. *J. Pure Appl. Algebra* 178 (2003), 307-333. Joint with A. Rosenschon.
- Étale descent for real number fields. *Topology* 42 (2003), 197-225.
- Two-primary algebraic  $K$ -theory of two-regular number fields. *Math. Z.* 233 (2000), 251-263. Joint with J. Rognes.
- On the Coates-Sinnott conjecture. *K-Theory* 19 (2000), 195-209. Joint with P. Cornacchia.
- On 2-primary algebraic  $K$ -theory of quadratic number rings with focus on  $K_2$ . *Acta Arithmetica* LXXXVII.3 (1999) 223-243. Joint with M. Crainic.
- Calculations of 2-primary algebraic  $K$ -theory of some group rings. *K-Theory* 16 (1999) 391-397.

### Selected papers in preparation

- Triangulated categories of logarithmic motives over a field. Joint with Federico Binda, Doosung Park.
- The second stable homotopy groups of motivic spheres. Joint with O. Röndigs and M. Spitzweck.
- Inverting motivic spherical Bott elements. Joint with T. Bachmann, E. Elmanto.
- Hochschild homology of mod- $p$  motivic cohomology. Joint with B. Dundas, M. Hill, K. Ormsby.
- Framed motivic  $\Gamma$ -spaces. Joint with G. Garkusha, Ivan Panin. arXiv:1907.00433
- $A^1$ -contractibility and topological contractibility: a survey. Invited chapter in *Clay Lecture Notes* published by The Clay Mathematics Institute. Joint with A. Asok. arXiv:1903.07851
- Motivic stable homotopy groups. Invited chapter in *Handbook of Homotopy Theory*. Joint with D. Isaksen. arXiv:1811.05729
- On (co)localization of algebras over operads. Joint with J. J. Gutierrez, O. Röndigs and M. Spitzweck. arXiv:1812.01715
- Hermitian  $K$ -theory, Dedekind  $\zeta$ -functions, and quadratic forms over rings of integers in number fields. Joint with J. I. Kylling and O. Röndigs. arXiv:1811.03940
- $A^1$ -contractibility of affine modifications. Joint with A. Dubouloz and S. Pauli, arXiv:1805.08959
- On very effective hermitian  $K$ -theory. To appear in *Mathematische Zeitschrift*. Joint with A. Ananyevskiy and O. Röndigs. arXiv:1712.01349
- Motivic Landweber exact theories and étale cohomology. Joint with E. Elmanto, M. Levine and M. Spitzweck. arXiv:1711.06258
- A cancellation theorem for Milnor-Witt correspondences. Joint with J. Fasel. arXiv:1708.06098