Publications dr.ir.R. Duits until 2018

Type of Publication	#
peer-reviewed international journals	**38**
peer-reviewed conferences proceedings	**47**
special issue int. journal	**1**
book chapters	**4**
books	**3**
peer-reviewed abstracts with code release	**2**

Total number of peer-reviewed international publications: 94.
Google scholar (h-ind 22, i-10 ind 44, cit. 1643).
Publications contain multiple novelties both on the theoretical as on the application side.
Key publications are available on my homepage:
http://bmia.bmt.tue.nl/people/RDuits/.

Peer-reviewed Journal Publications:

[**RD 1**] R. **Duits**, L. M. J. Florack, J. de Graaf, and B. M. ter Haar Romeny, "On the axioms of scale space theory," *Journal of Mathematical Imaging and Vision*, vol. 20, pp. 267–298, 2004.

[**RD 2**] R. **Duits** and M. van Almsick, "The explicit solutions of linear left-invariant second order stochastic evolution equations on the 2d-Euclidean motion group," *Quarterly of Applied Mathematics, American Mathetical Society*, vol. 66, pp. 27–67, April 2008.

[**RD 3**] R. **Duits** and E. M. Franken, "Left invariant parabolic evolution equations on $SE(2)$ and contour enhancement via invertible orientation scores, part I: Linear left-invariant diffusion equations on $SE(2)$," *Quarterly of Applied mathematics, AMS*, vol. 68, pp. 255–292, June 2010.

[**RD 4**] R. **Duits** and E. Franken, "Left invariant parabolic evolution equations on $SE(2)$ and contour enhancement via invertible orientation scores, part II: Nonlinear left-invariant diffusion equations on invertible orientation scores," *Quarterly of Applied mathematics, AMS*, vol. 68, pp. 293–331, June 2010.

[**RD 5**] R. **Duits**, M. Felsberg, G. Granlund, and B. M. ter Haar Romeny, "Image analysis and reconstruction using a wavelet transform constructed from a reducible representation of the Euclidean motion group," *International Journal of Computer Vision*, vol. 79, no. 1, pp. 79–102, 2007.

[**RD 6**] B. J. Janssen* & F. M. W. Kanters* & R. **Duits*** (joint first authors), L. M. J. Florack, and B. M. ter Haar Romeny, "A linear image reconstruction framework based on Sobolev type inner products.," *International Journal of Computer Vision*, vol. 70, no. 3, pp. 231–240, 2006.

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[**RD 9**] R. **Duits**, B. Janssen, A. Becciu, and H. van Assen, "A variational approach to cardiac motion estimation based on covariant derivatives and multi-scale helmholtz decomposition.," *Quarterly of Applied Mathematics, American Mathematical Society* 71, p.1–36, 2013.

[**RD 10**] B. J. Janssen and R. **Duits**, "Linear image reconstruction by Sobolev norms on the bounded domain.," *International Journal of Computer Vision*, vol. 84, no. 2, pp. 205–219, 2009.

[**RD 11**] E. M. Franken and R. **Duits**, "Crossing preserving coherence-enhancing diffusion on invertible orientation scores," *International Journal of Computer Vision (IJCV)*, vol. 85, no. 3, pp. 253–278, 2009.

[**RD 12**] M. Felsberg, R. **Duits**, and L. M. J. Florack, "The monogenic scale space on a bounded domain and its applications.," *International Journal of Computer Vision*, vol. 2–3, no. 64, pp. 187–201, 2005.

[**RD 13**] R. **Duits**, H. Führ, B.J. Janssen, M. Bruurmijn, L.M.J. Florack and H.A.C. van Assen, "Evolution Equations on Gabor Transforms and their Applications", *Applied and Computational Har-*

monic Analysis, vol.35 (3), p.483–526, 2013.

http://bmia.bmt.tue.nl/people/RDuits/articleDFJBFvA.pdf

[**RD 14**] F. M. W. Kanters, L. M. J. Florack, R. **Duits**, B. Platel, and B. M. ter Haar Romeny, "Alpha scale spaces in practice," *Pattern Recognition and Image Analysis*, vol. 17, no. 1, pp. 42–75, 2007.

[**RD 15**] R. **Duits**, "Schaal partituren," *NAW*, vol. 5/9, no. 3, pp. 224–232, 2008.

[**RD 16**] E.J. Creusen* & R. **Duits*** (joint first authors), A. Vilanova and L.M.J. Florack, "Numerical Schemes for Linear and Non-linear Enhancement of DW-MRI", NM-TMA vol. 6, no.1, p.138–168, 2013 *Numerical Methods–Theory and Applications*, .

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[**RD 17**] R. **Duits**, T.C.J.Dela Haije, E.J. Creusen and A. Ghosh, "Morphological and Linear Scale Spaces for Fiber Enhancement in DW-MRI", *Journal of Mathematical Imaging and Vision*, vol.46, no.3, pp. 326-368, 2013.

http://bmia.bmt.tue.nl/people/RDuits/JMIVDuits2011final.pdf ,

[**RD 18**] U. Boscain, R. **Duits**, F. Rossi and Y. Sachkov, "Curve Cuspless Reconstruction via sub-Riemannian Geometry" *ESAIM-COCV Control Optimization and Calculus of Variations.*, vol. 20, pp.748–770, 2014. *http://bmia.bmt.tue.nl/people/RDuits/1203.3089v2.pdf*.

[**RD 19**] E. Bekkers, R. **Duits**, T. Berendschot, B.M. ter Haar Romeny, "A Multi-Orientation Analysis Approach to Retinal Vessel Tracking." *http://bmia.bmt.tue.nl/people/RDuits/bekkersduitsARCHIV.pdf* *Journal of Mathematical Imaging and Vision* , vol. 49, no. 3 pp. 583–610, 2014.

[**RD 20**] R. **Duits**, U. Boscain, F. Rossi and Y. Sachkov, "Association Fields via Cuspless Sub-Riemannian Geodesics in SE(2)." *Journal of Mathematical Imaging and Vision* , vol. 49, no. 2 pp. 384–417, 2014.

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[**RD 21**] C.M.W. Tax, R. **Duits**, A. Vilanova, B.M. ter Haar Romeny, P.Hofman, L.Wagner, A.Leemans and P. Ossenblok, "Evaluating Contextual Processing in Diffusion MRI: Application to Optic Radiation Reconstruction for Epilepsy Surgery"

PLOSone Open Access Vol 9, no. 7, p.1–19, 2014.

http://bmia.bmt.tue.nl/people/RDuits/TaxDuitsetal.pdf.

[**RD 22**] U. Sharma and R. **Duits**. *Left-invariant evolutions of wavelet transforms on the Similitude Group.* ACHA *Applied and Computational Harmonic Analysis*, Vol. 39, p.110–137, 2015.

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[**RD 23**] J. Zhang* & R. **Duits*** (*joint main authors), G.R. Sanguinetti, B.M.ter Haar Romeny. "On Numerical Approaches for Linear Left-invariant Diffusions on SE(2), their Comparison to Exact Solutions, and their Applications in Retinal Imaging." vol. 9, p.1-50, 2016.

www.bmia.bmt.tue.nl/people/RDuits/ZhangDuits.pdf

[**RD 24**] J.Portegies, R.Fick, G.R.Sanguinetti, S.P.L.Meesters, G.Girard and R.**Duits**. *Improving Fiber Alignment in HARDI by Combining Contextual PDE flow with Constrained Spherical Deconvolution.* Accepted for open access publication in PlosOne 2015.

[**RD 25**] E.J. Bekkers* and R.**Duits*** and A.Mashtakov* and G.R.Sanguinetti* (*joint main authors). "A PDE Approach to Data-Driven Sub-Riemannian Geodesics" SIAM Journal on Imaging Sciences (SIIMS), vol 8, (4), p.2740–2770, 2015. *http://bmia.bmt.tue.nl/people/RDuits/siims.pdf*

[**RD 26**] R. **Duits*** & M.H.J. Janssen* (*joint main authors), J. Hannink, G. Sanguinetti. *Locally Adaptive Frames in the Roto-translation Group and their Applications in Medical Imaging*, JMIV 56(3), p.367–402, 2016. *http://bmia.bmt.tue.nl/people/RDuits/1502.08002v3.pdf*

[**RD 79**] B.M. ter Haar Romeny, E.J. Bekkers, J. Zhang, F. Fuang, R. **Duits**, B.Dashtbozorg et al. *Brain Inspired Algorithms for Retinal Image Processing*, Machine Vision and Applications, p.1–16, 2016.

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[**RD 89**] A. Mashtakov, R. **Duits**. *A cortical Based Model for Contour Perception on the Retinal Sphere* Program systems: Theory and applications, 2016, 7:4(31), p.231–247.

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[**RD 90**] A. Mashtakov, R. **Duits**, Yu. Sachkov, E. Bekkers, I. Beschastnyi. *Sub-Riemannian Geodesics in SO(3) with Application to Vessel Tracking in Spherical Images of Retina* Doklady Mathematics. Accepted. To appear in 2017. *https://www.dropbox.com/s/x45v8ik3a9wgk5y/SO3_dan.pdf?dl=0*

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[**RD 82**] S. Meesters, P. Ossenblok, L. Wagner, P. Hofman, O. Schrijns, P. Boon, L.M.J. Florack, A. Vilanova, and R. **Duits**. *Stability metrics for optic radiation tractography: towards damage prediction after resective surgery.*
Journal of Neuroscience Methods, 288, p.24-34, 2017.
For preprint see *http://www.sciencedirect.com/science/article/pii/S0165027017301620*

[**RD 83**] E.J. Bekkers, M. Loog, M., B.M. ter Haar Romeny, B. and R. **Duits**, *Template Matching on the Roto-Translation Group*, Published in IEEE-PAMI, Pattern Recognition and Machine Intelligence, 40(2), 1–12, Februari 2018.
DOI: 10.1109/TPAMI.2017.2652452
For article and code see *https://erikbekkers.bitbucket.io/TMSE2.html*

[**RD 85**] Abbasi-Surehjani, S., Zhang, J., **Duits**, R. and ter Haar Romeny, B.M. *Retrieving challenging vessel connections in retinal images by line co-occurence statistics*
Biological Cybernetics 111(3): 237247, 2017.
www.bmia.bmt.tue.nl/people/RDuits/samaneh.pdf

[**RD 84**] A.Mashtakov, R.**Duits**, Y.L.Sachkov, E.J.Bekkers,and I.Beschastnyi, *Tracking of Lines in Spherical Images via Sub-Riemannian Geodesics in SO(3)*, JMIV, 58(2), pp.239–264, 2017.
https://link.springer.com/article/10.1007/s10851-017-0705-9

[**RD 87**] J.M.Portegies & R.**Duits**. *New Exact and Numerical Solutions of the (Convection-)Diffusion Kernels on SE(3).*
Journal of Differential Geometry and Applications (DGA), 53, p.182-219, 2017.
See *http://bmia.bmt.tue.nl/people/RDuits/SE3JorgPortegiesDuits.pdf*.
For extended version see *https://arxiv.org/abs/1604.03843*

[**RD 92**] M.H.J.Janssen & A.J.E.M. Janssen & E.J.Bekkers & J.Olivan Bescos& R.**Duits**. *Design and Processing of Invertible Orientation Scores of 3D Images*,
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https://doi.org/10.1007/s10851-018-0806-0
See *http://bmia.bmt.tue.nl/people/RDuits/CEDOS-3D.pdf*.

[**RD 88**] R.**Duits** & S.P.L.Meesters & J.M.Mirebeau & J.M.Portegies. *Optimal Paths for Variants of the 2D and 3D Reeds-Shepp Car with Applications in Image Analysis.*
Journal of Mathematical Imaging and Vision (JMIV), to appear in 2018.
JMIV-Special Issue *Differential Geometry and Orientation Analysis.*
See *http://bmia.bmt.tue.nl/people/RDuits/main_FM_full.pdf*.
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Peer-reviewed proceedings/conference publications:

[**RD 27**] R. **Duits**, T. C. J. Dela Haije, A. Ghosh, E. J. Creusen, A. Vilanova, and B. ter Haar Romeny, "Enhancement of DW-MRI," in *Scale Space and Variational Methods in Computer Vision (Lecture Notes in Computer Science)*, vol. 6667, pp. 1–13, September 2011.

[**RD 28**] R. **Duits**, B. Janssen, F. Kanters, and L. M. J. Florack, "Linear image reconstruction from a sparse set of α scale space features by means of inner products of Sobolev type," *Lecture Notes in Computer Science, Springer-Verlag*, vol. 3753, pp. 96–111, June 2005.

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[**RD 31**] R. **Duits** and B. Burgeth, "Scale spaces on Lie groups," in *Scale Space and Variational methods* (M. Sgallari and Paragios, eds.), (Ischia, Italy), pp. 300–312, 2007.

[**RD 32**] R. **Duits**, L. Florack, B. ter Haar Romeny, and J. de Graaf, "Scale-space axioms critically revisited," in *Signal and Image Processing* (N.Younan, ed.), (Kauai), pp. 304–309, August 2002. Proceedings of the Fourth IASTED International Conference.

[**RD 33**] R. **Duits** and E. M. Franken, "Line enhancement and completion via left-invariant scale spaces on SE(2)," in *Scale Space and Variational Methods in Computer Vision (Lecture Notes in Computer Science)*, vol. 5567, (Heidelberg), pp. 795–807, Springer-Verlag, 2009.

[**RD 34**] R. **Duits**, F. Kanters, L. M. J. Florack, and B. M. ter Haar Romeny, "A comparison between the deep structure of alpha scale spaces," *Lecture Notes in Computer Science, Springer-Verlag*, vol. 3753, pp. 234–248, June 2005.

[**RD 35**] M. Felsberg, R. **Duits**, and L. Florack, "The monogenic scale space on a bounded domain and its applications," *Proceedings Scale Space Conference, volume 2695 of Lecture Notes of Computer Science, Springer, Isle of Skye, UK.*, pp. 209–224, June 2003.

[**RD 36**] L. M. J. Florack and R. **Duits**, "Regularity classes for locally orderless images," *Proceedings Scale Space Conference, Isle of Skye, UK.*, pp. 255–265, June 2003.

[**RD 37**] L. M. J. Florack, R. **Duits**, and J. Bierkens, "Tikhonov regularization versus scale space: a new result," in *Proceedings IEEE Conference on Image Processing ICIP 2004*, vol. 1, (Piscataway, NJ: IEEE), pp. 271–274.

[**RD 38**] L. M. J. Florack, R. **Duits**, B. J. Janssen, and F. M. W. Kanters, "Towards a new paradigm for motion extraction," in *Lecture Notes in Computer Science, Vol. 4141, Proc. 3rd Int. Conf. ICIAR 2006*, (Portugal), pp. 753–754, Springer, 2006.

[**RD 39**] K. Pedersen, R. **Duits**, and M. Nielsen, "On α-kernels, lévy processes, and natural image statistics," in *Proc. on the 5th International Conference on Scale Space and PDE methods* (W. Kimmel, Sochen, ed.), (Hofgeismar, Germany), pp. 486–480, Springer, 2005.

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[**RD 41**] E. M. Franken, R. **Duits**, and B. M. ter Haar Romeny, "Non-linear diffusion on the Euclidean motion group," in *Proc. of the first International Conference on Scale Space and Variational Methods in Computer Vision, Lecture Notes in Computer Science, Vol. 4485, Springer* (M. Sgallari and Paragios, eds.), pp. 461–472, June 2007.

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[**RD 63**] H. Kause, O. Filatova, R. **Duits**, M. Bruurmijn, A. Fuster, J. Westenberg, L.M.J. Florack, H.C.van Assen, *Myocardial strain assessment in tagging MRI from local frequency estimation* accepted for oral presentation at BME2015 conf. Egmond aan Zee, 2015.

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