Curriculum Vitae of Thomas Weinhart

Personal Details	 Work address: University of Twente, P.O. Box 217, 7500 AE Enschede, NL Residential address: Tweede Emmastraat 63, 7545 MP Enschede, NL Phone: +31 53 489 3301, E-mail: t.weinhart@utwente.nl, Web: http://www2.msm.ctw.utwente.nl/weinhartt Citizenship: German 		
Current Employment	Assistant Professor in Multiscale Mechanics, MESA ⁺ Institute for Nanotechnology/Engineering Technology, University of Twente, Enschede, Netherlands, 11/2012–08/2015 and since 03/2016.		
Education	Virginia Polytechnic University, Blacksburg, Virginia, USA		
	PhD in Mathematics from Virginia Polytechnic University in 2009		
	 Title of dissertation: 'A Posteriori Error Estimation of the Discontinuous Galerkin Method for Hyperbolic Systems of Conservation Laws.' Advisor: Slimane Adjerid, Grade Point Average: 4.0 (of 4.0) 		
	MSc in Mathematics from Virginia Polytechnic University in 2004		
	 Topic: 'Superconvergence and A Posteriori Error Estimation of the Discontinuous Galerkin Method for Hyperbolic Problems.' Advisor: Slimane Adjerid, Grade Point Average: 4.0 (of 4.0) 		
	Technische Universität München, München, Germany		
	BSc in Mathematics in 2004, with a concentration in Numerical Analysis and Optimization.		
Top 5 papers	K. Windows-Yule, T. Weinhart, D.J. Parker, A.R. Thornton, Effects of system packing on the segregation behaviours of granular systems, Phys. Rev. Lett. 112, 098001 (2014).		
	T. Weinhart, R. Hartkamp, A. R. Thornton, S. Luding, Coarse-grained local and objective continuum description of 3D granular flows down an inclined surface, Phys. Fluids 25, 070605 (2013).		
	T. Weinhart, A. R. Thornton, S. Luding, O. Bokhove, From discrete particles to continuum fields near a boundary, Granular Matter 14(2), 289-294 (2012).		
	T. Weinhart, A. R. Thornton, S. Luding, O. Bokhove , Closure relations for shallow granular flows from particle simulations, Granular Matter 14(4), 531-552 (2012).		
	S. Adjerid, T. Weinhart, Discontinuous Galerkin error estimation for linear symmetrizable hyperbolic systems, Mathematics of Computation 80(275), 1335-1367 (2011).		
Publication Overview	28 publications (18 journal publications, 4 refereed conference proceedings, 6 other); well-cited, with an h-index of 11 and 354 citations (source: Google Scholar).		
	Publications in Physics Review Letters (impact factor 7.51), Journal of Chemical Physics (2.95) and Computer Methods in Applied Mechanics and Engineering (2.96).		
PRESENTATION OVERVIEW	Presented at 21 international and 5 national conferences, 16 external and 21 internal seminars and workshops. This includes 51 oral presentations (20 invited) and 11 posters.		
Teaching Overview	Lectured and tutored a total of 40 courses since 2003 (see Teaching Record). Graduate Teaching Certificate of Virginia Tech, USA (2004), Dutch University Teaching Qualification (2015).		
Supervision Overview	Supervision of 5 PhD students, 3 MSc students, and 11 BSc projects. Examiner/referee of 2 PhD, 1 MSc, and 5 BSc projects.		
Grant	Obtained grants worth 1.2 million \in , further funding through industrial consultancy worth 32 k \in .		
Overview Organization Overview	Cofounder/CTO start-up MercuryLab, cofounder/lead developer of open-source code MercuryDPM, guest editor for Computational Particle Mechanics, member of grant & conference committees, organiser of 5 minisymposia, 3 workshops and 3 seminar series, active promotor of graduate school.		

Previous Appointments	 Visiting Researcher (December 2015 – February 2016) at Institute of Applied Mechanics at Universität Stuttgart, Germany. Chief Technical Officer (August–November 2015) at MercuryLab, Enschede, Netherlands. Assistant Professor (November 2012-July 2015) in Multiscale Mechanics, Engineering Technology, University of Twente, Netherlands. Postdoctoral Researcher (August 2011 – October 2012) in Multiscale Mechanics, Engineering Technology, University of Twente, Netherlands. Postdoctoral Researcher (August 2009 – July 2011), joint appointment in Multiscale Mechanics and Numerical Analysis & Computational Mechanics at University of Twente, Netherlands. 			
	Research Assistant (June 2008 – May 2009) at Virginia Tech, Blacksburg, VA, USA.			
	g, VA, USA.			
THIRD-PARTY	Grant	Amount (k€)	Year of award	
Funding	DFG 1486-2 Sintering: modelling of pressure-,	150	2012	
	temperature-, or time-dependent contacts.			
	DFG-STW 12272 Hydrodynamic theory of wet particle systems.	255	2012	
	DFG 1486-3 Sintering: modelling of pressure-, temperature-, or time-dependent contacts .	150	2014	
	STW Take-off grant The MercuryLab	40	2015	
	Poster prize of MESA ⁺ Institute for Nanotechnology	0.25	2015	
	Industrial consultancy projects	32	2015–16	
	3TU Technical Animation Fund	5	2016	
	STW 'Multiscale modelling of agglomeration –	621	2016	
	Application to tabletting & selective laser sintering'			
	Subtotal	1253		
Collaborations	S. Luding and A.R. Thornton, Multiscale Mechanics, Twente: Contact modelling, rheology and closures for continuum models, discrete particle simulations, and micro-macro transition.W. Wessel, Laboratory of Design, Production & Management, Twente: Selective Laser Sintering.J. Ooi, Particulate Solid Mechanics, Edinburgh: Granular flow rheology in silos.			
	R. Schwarze, Numerische Mathematik, Freiberg: Rheology of wet and soft granular materials.			

- H. Steeb, Continuum Mechanics, Stuttgart: SPH-DEM coupling modelling porous media flow.
- R. Fuchs, M. Kappl, Max-Planck Institute for Polymer Physics, Mainz: Heat-sintered particulates.
- T. Staedler, Surface and Material Technology, Siegen: Measuring friction using a nanoindenter.
- A. Kwade, Institut für Partikeltechnik, Braunschweig: Measuring bulk shear using $\mu\text{-}\mathrm{CT}$ shear tester.
- D. Parker, Nuclear Physics, Birmingham: Particle tracking using a PEPT synchrotron.
- R. Cruz Hidalgo, Granular Media Lab, Navarra: Coarse-graining and non-spherical particles.
- A. Hazel, Applied Math., Manchester: CFD models for non-Newtonian flows, CFD-DEM coupling.
- S. Adjerid, Mathematics, Virginia Tech: FEM error estimators for adaptive mesh refinement.
- O. Bokhove, Applied Mathematics, Leeds: Multiscale modelling of particulate flows.
- R.M. Hartkamp, Chemical & Biomolecular Engineering, Vanderbilt: Flow rheology in nanochannels.
- M. Ramaioli, Chemical and Process Eng., Surrey: Dosing of Cohesive Powders.
- V.B. Sundaresan, Mechanical & Aerospace Eng., Ohio State: Accelerated battery charging.
- C.B. Connor, Geosciences, South Florida: Modeling pyroclastic collisions in volcanic eruptions.
- A. Singh, Levich Institute, City College of New York: Rheology of wet and soft granular materials.
- C. Johnson, Applied Math., Manchester: Modelling a granular jet impacting an inclined plane.
- P. Richard, International Space Science Institute, Bern: Exp. and simulations of granular avalanches.
- B. Marks and I. Einav, Civil Engineering, Sydney: Modelling segregating flows.

Commitment to the academic	Guest journal editor of Computational Particle Mechanics on 'Computational Challenges in Granular Flows' (Sep. 2014–Oct. 2015).	
COMMUNITY	Scientific committee member for Int. Conf. on Particle-Based Methods (Particles) (since Sep. 2015).	
	 Chaired and organised five minisymposia at large international conferences: 'Computational Challenges in Granular Flows' at World Congress on Computational Mechanics (WCCM-ECCM-ECFD) in Barcelona, ES (July 21, 2014), 'Micro-Macro Transition: From Discrete/Particle Systems to Continuum Theory' at Int. Conf. Particle-based methods (Particles) in Stuttgart (September 19, 2013), 'DEM flow modelling' at the Int. Conf. Conveying and Handling of Particulate Solids (CHOPS) in Friedrichshafen, DE (September 11, 2012), 'Segregation in Granular Systems ' at Particles conference in Barcelona (Sept. 28-30, 2015). 'From Discrete Particles to Continuum Models of Granular Mechanics: Rapid Granular Flows' at Particles conference in Barcelona (Sept. 28-30, 2015). 	
	 Chaired and organised three workshops: Computational multiscale modelling of superdispersed multiphase flows, Enschede (Oct. 20, 2010), Code development workshop for MercuryDPM in Costa Adeje, Spain (Feb. 20–Mar. 20, 2014), Code development workshop for MercuryDPM in Perissa, Greece (Jan. 23–Feb. 20, 2015). 	
	 Organised three seminar series: Numerical Analysis and Computational Mathematics (Sep. 2009–June 2010), Multiscale Mechanics (Feb. 2010–Jan. 2013), MESA+ & MIRA & TGS Computational Science Lecture Series (since June 2015). 	
	 Promoting the graduate programme of the University of Twente: Introductory lecture for Dept. Mechanical Engineering at Master's Open Day (March 29, 2012). Developing and organising hands-on experimental tracks 'Granular Dampers & Grippers' and 'Building Bridges' for the CuriousU summer festival for prospective Master students (Aug. 2015). 	
	Co-founder and lead developer of MercuryDPM, a cutting-edge open-source code for particle simulations, with 12 developers and more than 20 users (founded September 2009).	
	Co-founder and CTO of MercuryLab, a start-up company providing consultancy and training in discrete particle simulations to industry (founded August 2015).	
Honours	Book author on 'Bridging the gap: calibration and validation of granular continuum models from particle data", to be completed by June 2016.	
	Invited keynote lecture at Int. Symp. on Plasticity in Keauhou Bay, HI, USA (Jan. 2016).	
	Poster price of MESA ⁺ Institute for Nanotechnology on 'Rolling, sliding & torsion friction of single silica microspheres: rail-motion nanoindenter exp. vs. DEM simulations & theory' (Oct. 2015).	
	Committee member of VIDI grant 'Shaping Segregation: Advanced Modelling of Segregation and its Application to Industrial Processes' (since Feb. 2015).	
	Graduate Teaching Assistantship (2003-2008) at Virginia Tech, VA, USA.	
	NSF Research Assistantship (2008-2009) at Virginia Tech, VA, USA.	
	Mathematics scholarship (TUMMS) at TU München, Munich, Germany (1999).	
Memberships	European Community on Computational Methods in Applied Sciences (ECCOMAS), European Geo sciences Union (EGU), J.M. Burgerscentrum Research School for Fluid Mechanics (JMBC), Four dation for Fundamental Research on Matter (FOM), Graduate School Engineering Mechanics (EM	
LANGUAGES	German (native), English (level C1), Dutch (level B2 incl. Staatsexamen NT2), Spanish (level B2).	
Training & Development	Courses on team building (June 2010), presentation & publication skills (Nov. 2011), STW and ERC grant writing (FebOct. 2013, Nov 2014); academic mentorship programme (since Feb. 2015)	

SUPERVISION Record

I work closely with several postdocs and PhD's (two have graduated). In this capacity, I organise regular meetings, develop research plans, write grants, recruit students, and teach them presentation and writing skills. I participate in organising the research school, organise seminars and teaching responsibilities, invite visitors and encourage collaborations. I further supervised several MSc students (two graduated *cum laude*) and BSc projects, and have been on examination committees in Italy, Spain, and Australia.

PhDs			
Ongoing	S Roy	Co-Supervisor	
	I Denissen	Co-supervisor	
	M van Schrojenstein L.	Daily supervisor	
	D Krijgsman	Daily supervisor	
	H Shi	Partial supervision	
Successfully	R Hartkamp	Co-supervisor	
completed	DR Tunuguntla	Daily supervisor	
	OI Imole	Partial supervision	
	K van der Vaart	Partial supervision	
	S Rubio Largo (Navarra)	Exam committee	
	T Miller (Sydney)	Exam committee	
	D Vescovi (Milan)	Exam committee	
Postdocs			
	DR Tunuguntla	Supervision continuum modelling, coarse-graining	
	D Vescovi	Supervision DPM modelling	
	K Imole	Supervision CG for experimental data	
Master studer	nts		
Supervised 7	MSc students ($2 \times$ supervisor	\mathcal{I} , 1× co-supervisor, 4× daily supervisor)	
Bachelor stud	ents		
Supervised three BSc theses, thirteen Introduction to Scientific Research projects.			
Examined four BSc theses at Univ. Twente, one at Univ. Navarra, ES.			
💋 🛛 Both B	Fransen and A te Voortwis	graduated cum laude	

Both R Fransen and A te Voortwis graduated cum laude.

STUDENT'S THESES

- D.R. Tunuguntla, Polydisperse granular flows over inclined channels, Ph.D. thesis, October 2015, University of Twente, NL.
 - R. Hartkamp, A Molecular Dynamics study of non-Newtonian flows of simple fluids in confined and unconfined geometries, Ph.D. thesis, May 2013, combined degree University of Twente, NL and Swinburn University, AUS.
 - A. te Voortwis, Closure laws for granular, shallow-laver, bi-dispersed flows down an inclined chute, Master thesis (cum laude), May 2013, University of Twente, NL.
 - A. A. Bakhtiary Davijani, Experiments and prediction of the spreading behavior of fibrous tows by means of the Discrete Element Method, Master thesis, July 2012, University of Twente, NL.
 - R. Fransen, Modeling granular flows impinging on an inclined plane with use of an open source DPM code in 3D, Master thesis (cum laude), April 2012, University of Twente, NL.

JOURNAL PUBLICATIONS

- [18] S. Roy, A. Singh, S. Luding, T. Weinhart Micro-Macro Transition and Simplified Contact Models for Wet Granular Materials, Comp. Particle Mech. (2015), DOI 10.1007/s40571-015-0061-8.
 - [17] T. Weinhart, C. Labra, S. Luding, J. Ooi, Influence of coarse-graining parameters on the analysis of DEM simulation results, Powder Technology (2015), DOI 10.1007/s40571-015-0061-8.
 - [15] D. R. Tunuguntla, A. R. Thornton, T. Weinhart From discrete elements to continuum fields: Extension to bidisperse systems, Comp. Particle Mech. (2015), DOI 10.1007/s40571-015-0087-y.
 - [16] S.M. Rubio-Largo, F. Alonso-Marroquin, T. Weinhart, S. Luding, R.C. Hidalgo Homogeneous cooling state of a system of 3D rod particles, Physica A, 443(1), 477–485 (2016).
 - [14] K. Imole, D. Krijgsman, T. Weinhart, V. Magnanimo, C.B. Edgar, M. Ramaioli, S. Luding, Experiments and Discrete Element Simulation of the Dosing of Cohesive Powders in a Simplified Geometry, Powder Technology, 287, 108–120 (2016).
 - [13] K. Windows-Yule, T. Weinhart, D. J. Parker, A. R. Thornton, The influence of thermal convection on density segregation in a vibrated binary granular system, Phys. Rev. E 89, 022202 (2014).
 - [12] K. Windows-Yule, T. Weinhart, D. J. Parker, A. R. Thornton Effects of packing density on the segregative behaviors of granular systems, Physical review letters 112(9), 098001 (2014).
 - [11] R. Fuchs, T. Weinhart, J. Meyer, H. Zhuang, T. Staedler, X. Jiang, S. Luding (joint first author), Rolling, sliding & torsion of micron-sized silica particles - experimental, numerical and theoretical analysis, Granular Matter 16(3), 281–297 (2014), MESA⁺ Poster Award 2015.
 - [10] S. Adjerid, T. Weinhart, Asymptotically Correct Discontinuous Galerkin error estimates for linear symmetric hyperbolic systems, Applied Numerical Mathematics 76, 101–131 (2014).
 - [9] T. Weinhart, R. Hartkamp, A. R. Thornton, S. Luding, Coarse-grained local and objective continuum description of three-dimensional granular flows down an inclined surface, Physics of Fluids 25, 070605 (2013), cited 28 times.
 - [8] A. R. Thornton, T. Weinhart, V. Ogarko, S.Luding, Multi-scale modeling of multi-component granular materials, Computer Methods in Materials Science 13(2), 1-16 (2013), editor's choice.
 - [7] R. Hartkamp, A. Gosh, T. Weinhart, S. Luding, A study of the anisotropy of stress in a fluid confined in a nanochannel, J. Chem. Phys. 137, 044711 (2012), *cited 26 times*.
 - [6] T. Weinhart, A. R. Thornton, S. Luding, O. Bokhove, Closure Relations for Shallow Granular Flows from Particle Simulations, Granular Matter 14(4), 531–552 (2012), cited 47 times.
 - [5] T. Weinhart, A. R. Thornton, S. Luding, O. Bokhove, From discrete particles to continuum fields near a boundary, Granular Matter 14(2), 289-294 (2012), *cited 53 times*.
 - [4] A. R. Thornton, T. Weinhart, S. Luding, O. Bokhove, Modeling of particle size segregation: Calibration using the discrete particle method, Mod. Phys. C 23, 1240014 (2012), cited 48 times.
 - [3] A. R. Thornton, T. Weinhart, S. Luding, O. Bokhove, Friction dependence of shallow granular flows from discrete particle simulations, Eur. Phys. J. E 35:127 (2012).
 - [2] S. Adjerid, T. Weinhart, Discontinuous Galerkin error estimation for linear symmetrizable hyperbolic systems, Math. Comp. 80, 1335-1367 (2011).
 - S. Adjerid, T. Weinhart, Discontinuous Galerkin error estimation for linear symmetric hyperbolic systems, Comp. Methods in Appl. Mech. & Eng., 198 (37-40), 3113-3129 (2009), cited 19 times.

Refereed Conference Proceedings

- [C4] S. Roy, S. Luding, T. Weinhart, Macroscopic bulk cohesion and torque for wet granular materials, Proceedings of the 8th International Conference for Conveying and Handling of Particulate Solids (2015).
- [C3] S. Roy, S. Luding, T. Weinhart, Towards hydrodynamic simulations of wet particle systems, Proceedings of the 7th World Congress on Particle Technology (2014).
- [C2] T. Weinhart, S. Luding, A. R. Thornton, From discrete particles to continuum fields in mixtures, AIP Conf. Proc. 1542, 1202–1205 (2013).
- [C1] A. R. Thornton, D. Krijgsman, A. de Voortwis, V. Ogarko, S. Luding, R. Fransen, S. Gonzalez, O. Bokhove, O. Imole, T. Weinhart, A review of recent work on the Discrete Particle Method at the University of Twente: An introduction to the open- source package MercuryDPM, Discrete Element Methods 6 (2013), Conference Proceedings.
- OTHER [O7] **T. Weinhart, D. Tunuguntla, A.R. Thornton, S. Luding**, Physik der Lawinen, Physik Dublications Journal, Wiley-VCH (*submitted*).
 - [O6] T. Weinhart, A. R. Thornton, I. Einav, Modelling and Computational Challenges in Granular Materials, Editorial: Modelling and Computational Challenges in Granular Materials, Computational Particle Mechanics (2015), DOI 10.1007/s40571-015-0091-2.
 - [O5] R. Fuchs, T. Weinhart, J. Meyer, H. Zhuang, T. Staedler, X. Jiang, S. Luding, When Particles Meet Nanoindentation: A Novel Strategy for Studying Particle Motion and Particle/Surface Interaction, MRS Proceedings 1652, 2014.
 - [O4] T. Weinhart, A.R. Thornton, D.R. Tunuguntla, C.R. Windows-Yule, Fast, flexible particle simulations, Australian Bulk Handling Review, Sept./Oct. 2015.
 - [O3] A. R. Thornton, D. Krijgsman, R. Fransen, S. Gonzalez, D. Tunuguntla, A. ten Voortwis, S. Luding, O. Bokhove and T. Weinhart, Mercury-DPM: Fast particle simulations in complex geometries, EnginSoft Year 10, No. 1 (2013).
 - [O2] A. R. Thornton, T. Weinhart, O. Bokhove, B. Zhang, D.M. van der Sar, K. Kumar, M. Pisarenco, M. Rudnaya, V. Savceno, J. Rademacher, J. Zijlstra, A. Szabelska, J. Zyprych, M. van der Schans, V. Timperio, F. Veerman, Modeling optimization of algae growth, Proceedings of the 72nd European Study Group Mathematics with Industry, 25-29 Jan 2010, Amsterdam, Netherlands. pp. 54–85. CWI.
 - [O1] T. Weinhart, A Posteriori Error Analysis of the Discontinuous Galerkin Method for Linear Hyperbolic Systems of Conservation Laws, Ph.D. thesis Virginia Tech (2005).

LIST OF CONFERENCE & SEMINAR PRESENTATIONS

INVITED TALKS	Symposium at Institute for Advanced Study, TU München, DE (January 20, 2016).
	Keynote Lecture at Intern. Conf. on Plasticity in Keauhou Bay, HI, USA, (January 5, 2016).
	School of Mathematics, University of Manchester, UK (November 10, 2015).
	School of Civil Engineering seminar, University of Leeds, UK (June 17, 2015).
	Meeting on Hydrodynamic Interactions, TU Freiberg, DE (June 8, 2015).
	Multiscale Simulation seminar, FAU Universität, Erlangen, DE (May 13, 2015).
	Civil and Environmental Engineering seminar, Polytechnico di Milano, Italy (March 27, 2014).
	DFG Particles In Contact (PiKo) workshop in Magdeburg, DE (March 4, 2014).
	Particles international conference in Stuttgart, DE (September 18-20, 2013).
	Engineering Technology seminar, Swinbourne Univ. in Melbourne, AUS (July 24, 2013).
	School of Civil Engineering seminar, University of Sydney, AUS (July 18, 2013).
	DFG PiKo meeting in Duisburg, DE (May 7, 2013).
	Granular Workshop at DLR (German Aerospace) in Cologne, DE (April 2, 2013).
	Particulate Solid Mechanics seminar, University of Edinburgh, UK (November 5-9, 2012).
	Engineering Mechanics symposium in Lunteren, NL (November 1-2, 2012).
	DFG PiKo Dialogue: Experiment – Model symposium in Siegen, DE (Oct. 1, 2012).
	International Space Science Institute workshop in Bern, CH (June 20, 2012).
	JMBC Burgersdag symposium in Delft, NL (January 13, 2012).
	International Space Science Institute workshop in Bern, CH (September 27, 2011).
	Institute of Geophysics seminar, TU Braunschweig, DE (December 8, 2010).
	Dept. of Mathematics seminar, Virginia Tech in Blacksburg, VA, USA (March 14, 2010).
	Dept. of Applied Analysis & Comp. Science, University Twente, Enschede, NL (Jan. 12, 2009)
Conference	CHoPS international conference in Tel Aviv, Israel (May 4, 2015).
Talks	ProcessNet conference in Magdeburg, DE (March 17, 2015).
	WCCM-ECCM-ECFD international conference in Barcelona, ES (July 21, 2014).
	EGU international conference in Vienna, Austria (April 28, 2014).
	AERC international conference in Karlsruhe, DE (April 11, 2014).
	Powders & Grains international conference in Sydney, AUS (July 8-12, 2013).
	EGU international conference in Vienna, Austria (April 8, 2013).
	ProcessNet conference in Weimar, DE (March 5, 2013).
	CHoPS international conference in Friedrichshafen, DE (Sept. 11, 2012).
	Particles international conference in Barcelona, ES (October 26, 2011).
	Earth Surface Sedimentary Flows Symposium in Bristol, UK (April 11, 2011).
	FERMaT-Impact-GIMFus symposium in Sevilla, ES (October 20, 2010).
	SIAM Southeastern-Atlantic international conference in Raleigh, NC (March 20, 2010).
Conference	MESA ⁺ Symposium on Nanotechnology, Enschede, NL (Nov. 2015), received poster price of $\in 250$.
Posters	Werkgemeenschap Scientific Computing (WSC) conference in Woudschoten, NL (Oct. 3-5, 2012).
	Gordon Research Conference in Rayleigh, NC, USA (July 10-13, 2012).
	Physics@FOM in Veldhofen, NL (January 17, 2012).
	EM symposium in Lunteren, NL (October 23, 2012).
	DFG Particles in Contact workshop in Magdeburg, DE (May 15, 2011).
	EGU international conference in Vienna, AU (April 3, 2011).
	PARDEM Particle Technology workshop in Enschede, NL (October 13, 2010).
	WSC conference in Woudschoten, NL (Oct. 6-8, 2010).
	ECCOMAS CFD international conference in Lisbon, PT (July 14, 2010).