

# CURRICULUM VITAE

Dr. phil. Mag. rer. nat.

**Arno Mayrhofer**



## PERSONAL DETAILS:

Born	13.08.1986
Nationality	Austria
Home Address	Brigittenauer Lände 38/19 1200 Vienna Austria
Mobile Phone Number	0043-650-4382178
Email	arno.m@gmx.at
Current Position	Postdoc at the University of Natural Resources and Life Sciences Vienna

## EMPLOYMENT:

2015 - to date	Lecturer at the Fachhochschule Campus Wien
2014 - to date	Postdoc at the Institute of Water Management, Hydrology and Hydraulic Engineering of the University of Natural Resources and Life Sciences Vienna – 2014 - to date: Consolidation of wall boundary treatment in GPUSPH, funded by EdF – 01 - 03.2015: Research stay at the Saint Anthony Falls Laboratory, University of Minnesota
2012 - 2013	Tutor at the University of Manchester
2010	Research Assistant at the University of Vienna implementing a new time-stepping scheme in an astrophysical software
Autumn 2009	Invited research stays at the Universities of Vigo and Manchester to implement an advanced 3D pre-processing tool for SPHysics
Summer 2009	Internship at MACSI, University of Limerick, Ireland working on the stochastic simulation of noisy oscillators and modelling of financial time series
Summer 2008	Numerical simulation of laser rangefinders in Mathcad and Geometric calculations for navigation systems for Vectronix AG
Summer 2007	Numerical simulation of VECSLs for signal transfer in C++ for Photeon Technologies
Summer 2004	Evaluation and Setup of a bug tracking system for inet-logistics (still in use)
Summer 2003	Volunteer at the Institute of Handling Devices and Robotics (Technical University of Vienna), Software development for Multi-Agent-Systems in C++

## EDUCATION:

- 2010 - 2013 Graduate study of Civil Engineering at the University of Manchester  
– PhD thesis: *An investigation into wall boundary conditions and three-dimensional turbulent flows using Smoothed Particle Hydrodynamics*  
– Supervisors: Prof. D. Laurence, Dr. B. D. Rogers, D. Violeau  
– 2011 - 2012: Industrial placement at EDF R&D in Chatou, France  
– 30.01.2014: Defended PhD
- 2005 - 2010 Diploma study of Mathematics at the University of Vienna  
– Diploma thesis: *Numerical methods for parabolic differential equations*  
– Supervisor: Prof. H. Muthsam  
– 28.02.2008: First diploma examination passed with honours  
– 07.09.2010: Diploma with honours
- 2008 - 2009 Erasmus year for undergraduate study of Mathematics at the University College Cork, Ireland  
– Final Year Project: SPPhysics in Theory and Practice
- 2005 - 2006 Undergraduate study of Physics at the University of Vienna
- 2000 - 2004 Secondary school in Lauterach  
Final examination passed with honours

## ACADEMIC ACTIVITIES:

- Publications
- A. Mayrhofer**, D. Laurence, B. Rogers and D. Violeau, *DNS and LES of 3-D wall-bounded turbulence using Smoothed Particle Hydrodynamics*, Computers & Fluids, 2015.
- A. Mayrhofer**, M. Ferrand, C. Kassiotis, D. Violeau and F. Morel, *Unified semi-analytical wall boundary conditions in SPH: analytical extension to 3-D*, Numerical Algorithms, 2014.
- A. Mayrhofer**, B. D. Rogers, D. Violeau and M. Ferrand, *Investigation of wall bounded flows using SPH and the unified semi-analytical wall boundary conditions*, Computer Physics Communications, 2013.
- M. Jablonska, **A. Mayrhofer** and J. Gleeson, *Stochastic Simulation of Uplift process for the Irish Electricity Market*, Mathematics-in-Industry Case Studies, 2010.
- Conference contributions (5 most recent)
- A. Mayrhofer**, G. Bilotta and A. Hérault, *Semi-analytical wall boundary conditions for locally flat geometries*, Proceedings of the 10<sup>th</sup> SPHERIC workshop, Prato, 2015.
- A. Mayrhofer**, D. Laurence, B. D. Rogers and D. Violeau, *Large eddy simulation with SPH: Mission impossible?*, Proceedings of the 9<sup>th</sup> SPHERIC workshop, Paris, 2014.
- D. Violeau, **A. Mayrhofer** and A. Leroy *Exact computation of SPH wall renormalising integrals in 3-D*, Proceedings of the 9<sup>th</sup> SPHERIC workshop, Paris, 2014.
- G. Bilotta, A. Vorobyev, A. Hérault, **A. Mayrhofer** and D. Violeau, *Modelling real-life flows in hydraulic waterworks with GPUSPH*, Proceedings of the 9<sup>th</sup> SPHERIC workshop, Paris, 2014.
- A. Mayrhofer**, D. Laurence, B. D. Rogers, D. Violeau and M. Ferrand, *Direct numerical simulation of 3-D turbulent wall bounded flows with SPH*, Proceedings of the 8<sup>th</sup> SPHERIC workshop, Trondheim, 2013.

Awards	<ul style="list-style-type: none"> <li>– 2<sup>nd</sup> prize in the competition for the best student paper at the 7<sup>th</sup> SPHERIC workshop, 2012</li> <li>– 3<sup>rd</sup> prize in the competition for the best student paper at the 8<sup>th</sup> SPHERIC workshop, 2013</li> </ul>
Invited talks	Turbulent wall-bounded flows with SPH, Unit of Environmental Engineering, University of Innsbruck, Austria, 2013
Reviewing activities	<ul style="list-style-type: none"> <li>– Advances in Water Resources</li> <li>– Computer Physics Communications</li> <li>– Journal of Hydroinformatics</li> <li>– Environmental Fluid Mechanics</li> <li>– River Systems</li> </ul>
Contributions	<p>70<sup>th</sup> European Study Group with Industry</p> <ul style="list-style-type: none"> <li>– The effect of Mechanical Loading on the Frequency of an Oscillator Circuit</li> <li>– Uplift Quadratic Program in Irish Electricity Price Setting</li> </ul> <p>SPHysics - Open-source SPH free-surface flow solver</p> <ul style="list-style-type: none"> <li>– MyGeo, a 2D pre-processing tool</li> <li>– 3-D pre-processing for SPHysics since version 2.2</li> </ul> <p>Open-source software</p> <ul style="list-style-type: none"> <li>– GPUSPH, a multi-GPU SPH solver</li> <li>– Crixus, a GPU-based pre-processing tool written for several SPH solvers</li> <li>– GEES, a solver for the 1-D Euler equations</li> </ul>

## SKILLS:

Languages	German (native), English (fluent), French (B2+)
Programming	Fortran, C, C++, Cuda, Matlab, Mathematica, Python, Mathcad, Java, HTML, CSS, PHP
Computing	Large-scale parallel computing using MPI and OpenMP on state-of-the-art systems ( <i>e. g.</i> Blue Gene Q, Power7), scientific computing using GPGPUs, Git
Operating Systems	Linux (Fedora, Debian), Windows
Visualization	Blender, ParaView
Meshing	Meshlab, Salome, GMSH
Typesetting	L <sup>A</sup> T <sub>E</sub> X, Asymptote



Arno Mayrhofer