

# Publications of Ing. Marek Gayer, Ph.D.

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## International conferences papers

- [1] M. Gayer, H. Niemistö, and T. Karhela, “An unstructured semantic mesh definition suitable for finite element method,” in *Proceedings of the 14th IEEE International Conference on Computational Science and Engineering (CSE-2011)*, (Dalian, China), pp. 137–143, IEEE, 2011. ISBN 978-0-7695-4477-9.
- [2] M. Gayer, T. Karhela, and J. Kortelainen, “CFD modelling as an integrated part of multi-level simulation of process plants - semantic modelling approach,” in *Proceedings of the 42th Summer Computer Simulation Conference (SCSC'10)*, pp. 219–227, Society for Modeling and Simulation International (SCS), ACM Press, 2010.
- [3] M. Milovanovic, M. Gayer, and O. M. Aamo, “Model-based stabilization of vortex shedding with CFD verification,” in *48th IEEE International Conference on Decision and Control*, (Shanghai, China), IEEE, 2009.
- [4] M. Gayer, M. Milovanovic, and O. M. Aamo, “A simulation framework for testing flow control strategies,” in *The 18th International Conference on Applied Simulation and Modelling*, (Palma, Spain), pp. 69–76, IASTED, ACTA Press, 2009.
- [5] M. Gayer and G. Iannaccone, “A software platform for nanoscale device simulation and visualization,” in *IEEE International Conference on Advances in Computational Tools for Engineering Applications*, (Zouk Mosbeh, Lebanon), pp. 432–437, Notre Dame University, Lebanon, IEEE, 2009.
- [6] M. Gayer and P. Slavík, “Hierarchical trees of unsteady simulation datasets,” in *Proceedings of 13th International Conference on Applied Simulation and Modelling*, (Rhodes, Greece), pp. 303–308, IASTED, ACTA Press, 2004.
- [7] P. Kadlec, M. Gayer, and P. Slavík, “Data visualization using hardware accelerated spline interpolation,” in *Proceedings of the 12th International Conference in Central Europe on Computer Graphics, Visualization and Computer Vision* (V. Skala, ed.), (Pilsen, Czech republic), pp. 117–124, University of West Bohemia, Pilsen, UNION Agency - Science Press, 2004.
- [8] P. Slavik, M. Gayer, F. Hrdlička, and O. Kubelka, “Visualization for modeling and simulation: problems of visualization of technological processes,” in *Proceedings of the 35th Winter Simulation Conference*, vol. 1, (New Orleans, USA), pp. 746–754, Winter Simulation Conference, ACM Press, Omnipress, 2003.
- [9] M. Gayer, P. Slavík, and F. Hrdlička, “Pre-calculated fluid simulator states tree,” in *Proceedings of 12th International Conference on Applied Simulation and Modelling*, (Marbella, Spain), pp. 610–615, IASTED, ACTA Press, 2003.
- [10] M. Gayer, P. Slavík, and F. Hrdlička, “Real-time simulation and visualization using pre-calculated fluid simulator states,” in *Proceedings of Seventh International Conference on Information Visualization*, (London, UK), pp. 440–445, IEEE Computer Society Press, Los Alamitos, July 2003.
- [11] M. Gayer, P. Slavík, and F. Hrdlička, “Interactive educational system for coal combustion modeling in power plant boilers,” in *Proceedings of the IEEE EUROCON 2003 - The International Conference on Computer as a Tool*, vol. 2, (Ljubljana, Slovenia), pp. 220–224, IEEE Computer Society Press, September 2003.
- [12] M. Gayer, P. Slavík, and F. Hrdlička, “Interactive system for pulverized coal combustion visualization with fluid simulator,” in *Proceedings of the International Conference on Visualization, Imaging, and Image Processing Conference*, (Malaga, Spain), pp. 288–293, IASTED, ACTA Press, 2002.
- [13] M. Gayer, F. Hrdlička, and P. Slavík, “Dynamic visualisation of the combustion processes in boilers,” in *Proceedings of The 10th International Conference in Central Europe on Computer Graphics, Visualization and Computer Vision*, (Pilsen, Czech republic), UNION Agency - Science Press, 2002.

## Invited papers for international conferences

- [14] M. Gayer, "Modeling and visualization of combustion using fluid simulator and particle systems," in *Proceedings of the International Conference and Competition Student EEICT*, (Brno, Czech Republic), pp. 306–309, VUT Brno, 2003. "Award of the Dean for the best work in the International Competition of student creative projects Student EEICT 2003".

## Journal papers

- [15] J. Allison, M. Gayer, and et al., "Recent developments in Geant4," *Nuclear Instruments and Methods in Physics Research Section A: Accelerators, Spectrometers, Detectors and Associated Equipment*, vol. 835, pp. 186 – 225, 2016.
- [16] M. Gayer, J. Apostolakis, G. Cosmo, A. Gheata, J.-M. Guyader, and T. Nikitina, "New software library of geometrical primitives for modeling of solids used in Monte Carlo detector simulations," *Journal of Physics: Conference Series*, vol. 396, no. 5, p. 052035, 2012.
- [17] M. Gayer, F. Hrdlička, and P. Slavík, "Dynamic visualisation of the combustion processes in boilers," *Journal of WSCG*, vol. 10, no. 3, pp. 25–32, 2002. University of West Bohemia, Pilsen.
- [18] M. Gayer, "Modern graphical accelerators," *Softwarové noviny*, vol. 12, no. 7, pp. 72–84, 2001. Journal in Czech language.

## Ph.D. and Master Thesis

- [19] M. Gayer, *Real-time Visualization Techniques for Modelling of Combustion and Fluids*. PhD thesis, Czech Technical University in Prague, Faculty of Electrical Engineering, Department of Computer Science and Engineering, CTU in Prague, Karlovo nám. 13, 121 35 Prague 2, Czech Republic,, 2005.
- [20] M. Gayer, *Software interfaces for graphical adapters*. PhD thesis, Czech Technical University in Prague, Faculty of Electrical Engineering,, Department of Computer Science and Engineering, Karlovo nám. 13, 121 35 Prague 2, Czech Republic,, 2000.

## Other papers

- [21] M. Gayer, "Current status of the development of the Unified Solids library," in *Proceedings of 18th Geant4 Collaboration Meeting*, (Seville, Spain), 2013.
- [22] P. M. Vila and M. Gayer, "AIDA project: SFT group develops a new generation Geometry Toolkit," 2013.
- [23] M. Gayer, "Status of the development of the Unified Solids library," in *Proceedings of 2nd AIDA Annual Meeting*, (Frascati, Italy), 2013.
- [24] M. Gayer, J. Apostolakis, G. Cosmo, A. Gheata, J.-M. Guyader, and T. Nikitina, "Unified Solids," in *Proceedings of 17th Geant4 Collaboration Meeting*, (Chartres, France), 2012.
- [25] M. Gayer, "Fast simulation of fluids," in *Proceedings of CTU Workshop*, (Prague, Czech republic), CTU, Faculty of Electrical Engineering, 2004.
- [26] M. Gayer, "Simulation and visualization of combustion powered by fluid simulator," in *Proceedings of CTU Poster*, (Prague, Czech republic), p. PE10, CTU, Faculty of Electrical Engineering, 2003. "Award of Dean of the Faculty of Electrical Engineering of the Czech Technical University in Prague for work Simulation and Visualization of Combustion Powered by Fluid Simulator, presented at Poster 2003".
- [27] M. Gayer, "Simulation and visualization of combustion processes in pulverized coal boilers," in *Proceedings of CTU Workshop*, (Prague, Czech republic), CTU, Faculty of Electrical Engineering, 2003. "Award of the rector for placing between the best projects of PhD students, that were solved within scope of CTU internal grants and that were presented on conference CTU Workshop 2003".
- [28] M. Gayer and P. Slavík, "Interactive simulation of pulverized coal combustion," in *User Interfaces Visualization, 10th Bilateral student workshop*, (Dresden, Germany), HTW Dresden, 2002.

- [29] M. Gayer, "Coal combustion processes visualisation using particle system," in *Proceedings of CTU Poster*, (Prague, Czech republic), p. IC16, CTU, Faculty of Electrical Engineering, 2002.
- [30] M. Gayer, "Simulation and visualization of combustion processes in pulverized coal boilers," in *Proceedings of CTU Workshop*, vol. B, (Prague, Czech republic), pp. 782–783, CTU, Faculty of Electrical Engineering, 2002.
- [31] M. Gayer, "MGL graphics library," in *User Interfaces Visualization, 8th Bilateral student workshop*, (Dresden, Germany), HTW Dresden, 2000.