

Dr. Marco Salvalaglio

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Curriculum Vitae:

5.4.1988	born in Rho (MI), Italy
2007 – 2012	Study of Physics at the University of Milano-Bicocca (Milano, Italy). Bachelor of Science in Physics in 2010 (110/110 cum Laude), Master of Science in Physics in 2012 (110/110 cum Laude)
2014 - 2015	Visiting PhD student (4 months) at the Institute of Scientific Computing, Department of Mathematics at the Technische Universität Dresden
2015	Visiting PhD student (2 months) at the Leibnitz Institute “Innovation for High Performance Microelectronics (IHP)”, Frankfurt(Oder)
2016	PhD in Materials Science, European Doctor in Physics and Chemistry of Advanced Materials (PCAM doctorate), Doctor Europaeus, on “Continuum Modeling of vertical heterostructures: elastic properties and morphological evolution”. University of Milano-Bicocca (with Prof. Leonida Miglio, Prof. Dr. Francesco Montalenti)
2016 – present	Alexander von Humboldt Postdoctoral research fellow at the Institute of Scientific Computing, Department of Mathematics at the Technische Universität Dresden with Prof. Dr. Axel Voigt.
2016 – present	Guest Scientist at Leibnitz Institute “Innovation for High-Performance Microelectronics (IHP)”, Frankfurt(Oder), with Prof. G. Capellini.

Awards and Functions:

since 2010	Member of the Italian Physical Society (SIF)
since 2016	Alexander von Humboldt fellow (two-year funded fellowship awarded in 2016)

Areas of Research:

Material modeling, Mesoscale modeling, Elasticity and Plasticity, Phase field and phase field crystal methods, Computational materials science, Scientific Computing, High performance computing.

Selected Publications:

- F. Montalenti, M. Salvalaglio, A. Marzegalli, P. Zaumseil, G. Capellini, T. U. Schüllli, M. A. Schubert, Y. Yamamoto, B. Tillack and T. Schroeder. *Fully coherent growth of Ge on free-standing Si(001) nanomesas*. Physical Review B **89**, 014101 (2014)
- M. Salvalaglio and F. Montalenti. *Fine control of plastic and elastic relaxation in three-dimensional Ge/Si vertical heterostructures*. Journal of Applied Physics **116**, 104306 (2014).
- M. Salvalaglio, R. Backofen, R. Bergamaschini, F. Montalenti and A. Voigt. *Faceting of equilibrium and metastable nanostructures: a Phase-Field model of surface diffusion tackling realistic shapes*. Crystal Growth & Design **15**, 2787 (2015).
- M. Salvalaglio, R. Bergamaschini, F. Isa, A. Scaccabarozzi, G. Isella, R. Backofen, A. Voigt, F. Montalenti, G. Capellini, T. Schroeder, H. von Känel and L. Miglio. *Engineered coalescence by annealing 3D Ge microstructures into high-quality suspended layers on Si*. ACS Applied Materials and Interfaces **7**, 19219 (2015).
- F. Isa, M. Salvalaglio, Y. A. Rojas Dasilva, M. Meduna, M. Barget, A. Jung, T. Kreiliger, G. Isella, R. Erni, F. Pezzoli, E. Bonera, P. Niedermann, P. Groning, F. Montalenti and H. von Känel. *Highly mismatched, dislocation-free SiGe/Si(001) heterostructures*. Advanced Materials **28**, 884 (2016).
- R. Bergamaschini, M. Salvalaglio, R. Backofen, A. Voigt, F. Montalenti. *Continuum modelling of semiconductor heteroepitaxy: an applied perspective*. Advanced in Physics: X **1**, 331-367 (2016).
- M. Salvalaglio, R. Backofen, A. Voigt. *Thin-film growth dynamics with shadowing effects by a phase-field approach*. Physical Review B **94**, 235432 (2016).
- M. Naffouti, R. Backofen, M. Salvalaglio, T. Bottein, M. Lodari, A. Voigt, T. David, A. Benkouider, I. Fraj, L. Favre, A. Ronda, I. Berbezier, D. Grosso, M. Abbarchi, M. Bollani. *Complex dewetting scenarios of ultra-thin silicon films for large-scale nano-architectures*. Science Advances **3**, eaao1472 (2017).
- M. Salvalaglio, R. Backofen, K. R. Elder, A. Voigt. *Defects at grain boundaries: A coarse-grained, three-dimensional description by the amplitude expansion of the phase-field crystal model*. Physical Review Materials **2**, 053804 (2018).
- M. Salvalaglio, P. Zaumseil, Y. Yamamoto, O. Skibitzki, R. Bergamaschini, T. Schroeder, A. Voigt, G. Capellini. *Morphological evolution of Ge/Si nano-strips driven by Rayleigh-like instability*. Applied Physics Letters **112**, 022101 (2018).