Martin Schagerl’s List of Publications

Status April 26, 2019. Articles highlighted with ✪ are listed as selected publications at my personal homepage www.jku.at/ikl/.../schagerl.html

Book

✪ W. Steiner and M. Schagerl,
Raumflugmechanik: Dynamik und Steuerung von Raumfahrzeugen.

Journal Papers

• M. Hanisch and M. Schagerl,
Strength Analysis of Additively Manufactured Titanium Load Introduction Elements.

• Y. Zhao, M. Schagerl, S. Gschoßmann and C. Kralovec,
In-situ spatial strain monitoring of a single-lap joint using inkjet-printed carbon nanotube embedded thin films.

• M. Meindlhumer, K. Horejsi and M. Schagerl,
Manufacturing and costs of current sandwich and future monolithic designs of spoilers.

• S. Nonn, M. Schagerl and C. Kralovec,
Damage mechanisms under static and fatigue loading at locally compacted regions in a high pressure resin transfer molded carbon fiber non-crimp fabric.

• Y. Zhao, S. Gschoßmann, M. Schagerl, P. Grüner and C. Kralovec,
Characterization of the spatial elastoresistivity of inkjet-printed carbon nanotube thin films.

• D. Tasch, A. Mad, R. Stadlbauer and M. Schagerl,
Thickness dependency of mechanical properties of laser-sintered polyamide lightweight structures.

• A. Preisler, K.-U. Schröder and M. Schagerl,
Intrinsic damage assessment of beam structures based on structural damage indicators.
S. Nonn, M. Schagerl, Y. Zhao, S. Gschoßmann and C. Kralovec,
Application of electrical impedance tomography to an anisotropic carbon fibre-reinforced polymer composite laminate for damage localization.

L. Hingshammer, M. Grillenberger, M. Schagerl, M. Malek and S. Hunger,
Biomechanical testing of zirconium dioxide osteosynthesis system for Le Fort I advancement osteotomy fixation.

Y. Zhao, M. Schagerl, C. Viechtbauer and K. Loh,
Characterizing the Conductivity and Enhancing the Piezoresistivity of Carbon Nanotube-Polymeric Thin Films.

C. Kralovec and M. Schagerl,
Electro-mechanical impedance measurements as a possible SHM method for sandwich debonding detection.

S. Hörmann, A. Adumitroaie, C. Viechtbauer and M. Schagerl,
The effect of fiber waviness on the fatigue life of CFRP materials.

S. Hörmann, A. Adumitroaie and M. Schagerl,
The effect of ply folds as manufacturing defect on the fatigue life of CFRP materials.
Frattura ed Integrità Strutturale, 38:76-81, 2016.

L. Retschitzegger, A. Adumitroaie, S. Hörmann and M. Schagerl,
Using X-FEM for Progressive Damage Simulation of Laminated Composites Featuring Manufacturing Imperfections.

A. Adumitroaie, E. J. Barbero and M. Schagerl,
Matrix Cracking in Non-Symmetric Laminates under Combined Membrane and Flexural Loading.

C. Kralovec, M. Schagerl and K.-U. Schröder,
Elastic body impact on sandwich panels at low and intermediate velocity.

C. Viechtbauer, K.-U. Schröder and M. Schagerl,
Smart Structural Health Monitoring validated on simple plate under compressive loading.

B. Müller, K.-U. Schröder and M. Schagerl,
Prediction of the collapse mode of axially crushed profiles.

M. Schagerl,
Analytical formulas for the effective width caused by bulging and flattening of curved aircraft panels.

C. Mittelstedt and M. Schagerl,
A composite view on Windenburg’s problem: Buckling and minimum stiffness requirements of compressively loaded orthotropic plates with edge reinforcements.
• P. Bürrmann, R. Rolfes, J. Tessmer and M. Schagerl,
  A semi-analytical model for local postbuckling analysis of stringer- and frame-stiffened panels.

☆ M. Krupa, W. Poth, M. Schagerl, A. Steindl, W. Steiner, H. Troger and G. Wiedermann,
  Modelling, Dynamics and Control of Tethered Satellite Systems.

☆ S.S. Antman and M. Schagerl,
  Slumping instabilities of elastic membranes holding liquids and gases.

☆ M. Schagerl and A. Berger,
  Propagation of small waves in inextensible strings.

• M. Krupa, M. Schagerl, A. Steindl, P. Szmolyan and H. Troger,
  Relative equilibria of tethered satellite systems and their stability for very stiff tethers.

• M. Krupa, A. Kuhn, M. Schagerl, W. Steiner, A. Steindl, H. Troger, G. Wiedermann,

• M. Krupa, M. Schagerl, A. Steindl and H. Troger,

☆ M. Schagerl, W. Steiner, A. Steindl and H. Troger,
  On the paradox of the free falling folded chain.

Conference Articles

• C. Kralovec and M. Schagerl,
  Experimental measurements of vibrations of artificial sub-surface cracks and evaluation of
  identification potential for the electro-mechanical impedance method.
  A. L. Gyekenyesi (Ed.), Nondestructive Characterization and Monitoring of Advanced Materials, Aerospace, Civil
  Infrastructure, and Transportation XIII, 10971, Society of Photo-Optical Instrumentation Engineers (SPIE), 2019.

• R. Soman, M. Schagerl, C. Kralovec, K.-U. Schröder, A. Preisler and W. Ostachowicz,
  Application of Kalman filter based neutral axis tracking for crack length quantification in beam
  structures.
  P. Fromme (Ed.), Health Monitoring of Structural and Biological Systems, 10972, Society of Photo-Optical
  Instrumentation Engineers (SPIE), 2019.

• C. Humer, M. Schagerl and C. Kralovec,
  Testing the scattering analysis method for guided waves by means of artificial disturbances.
  Proceedings of the 7th Asia-Pacific Workshop on Structural Health Monitoring APWSHM, The e-Journal of Non-

• M. Schagerl and M. Grillenberger,
  On the back calculation of material strength values from strength test results.
• S. Gschoßmann, T. Oberascher and M. Schagerl, 
Quantification of subsurface cracks in a thin aluminium beam by the use of nonlinear guided wave
theory – a numerical and model-based approach.
Proceedings of the 9th European Workshop on Structural Health Monitoring EWSHM, The e-Journal of Non

• C. Kralovec, M. Schagerl and M. Mayr,
Localization of damages by model-based evaluation of electro-mechanical impedance measurements.
Proceedings of the 9th European Workshop on Structural Health Monitoring EWSHM, The e-Journal of Non

• Y. Zhao, M. Schagerl and C. Kralovec,
Updating the finite element model for electrical impedance tomography using self-organizing map.
H. Sohn (Ed.), Sensors and Smart Structures Technologies for Civil, Mechanical, and Aerospace Systems, 10598,
Society of Photo-Optical Instrumentation Engineers (SPIE), 2018.

• C. Kralovec, T. Erlinger, S. Gschoßmann and M. Schagerl,
Manufacturing of artificial sub-surface cracks to investigate non-linear features of electro-
mechanical impedance measurements.
P. J. Shull (Ed.), Nondestructive Characterization and Monitoring of Advanced Materials, Aerospace, Civil Infrastructure,
and Transportation XII, 10599, Society of Photo-Optical Instrumentation Engineers (SPIE), 2018.

• M. Winklberger, P. HEftberger, M. Sattlecker and M. Schagerl,
Fatigue strength and weight optimization of threaded connections in tie-rods for aircraft structures.

• C. Kralovec, M. Schagerl and T. Erlinger,
F.-K. Chang and F. Kopsaftopoulos (Eds.), Structural Health Monitoring – Real-Time Material State Awareness

• Y. Zhao, S. Gschoßmann and M. Schagerl,
Observing the Fracture Behavior of a Center Crack via Electrical Impedance Tomography Using In
kjet-printed Carbon Nanotube Thin Films.
F.-K. Chang and F. Kopsaftopoulos (Eds.), Structural Health Monitoring – Real-Time Material State Awareness

• S. Hörrmann, A. Adumitroaie, C. Kralovec and M. Schagerl,
The influence of resin starved area manufacturing imperfections on the mechanical performance of non-crimp fabric CFRP laminate.
Proceedings of 21st International Conference on Composite Materials, Paper ID 3762 (10 pages), International
Committee on Composite Materials (ICCM), 2017.

• S. Gschoßmann and M. Schagerl,
Numerical Study of Interaction of Nonlinear Guided Waves with Breathing Damage in Isotropic material.

• C. Humer, C. Kralovec and M. Schagerl,
Scattering Analysis of Lamb Waves at Subsurface Cracks in Isotropic Plates.
• M. Grillenberger and M. Schagerl,
  *Strain rate dependent yield behavior under compression load of metallic materials based on experimental data.*

• S. Hörmann, M. Schagerl, M. Cichocki and C. Kralovec,
  *Direkte Messung des elektrischen Widerstands zur Schadensdetektion in anisotropen CFK Laminaten.*

• P. Grüner, Y. Zhao and M. Schagerl,
  *Characterization of the spatial elastoresistivity of inkjet-printed carbon nanotube thin films for strain-state sensing.*
  H.F. Wu et al. (Eds.), Nondestructive Characterization and Monitoring of Advanced Materials, Aerospace and Civil Infrastructure, 10169, Society of Photo-Optical Instrumentation Engineers (SPIE), 2017.

• Y. Zhao, L. Wang, S. Gupta, K. Loh and M. Schagerl,
  *Comparison of electrical impedance tomography inverse solver approaches for damage sensing.*
  H.F. Wu et al. (Eds.), Nondestructive Characterization and Monitoring of Advanced Materials, Aerospace and Civil Infrastructure, 10169, Society of Photo-Optical Instrumentation Engineers (SPIE), 2017.

• Y. Zhao, C. Beisteiner, S. Gschoßmann and Martin Schagerl,
  *An inkjet-printed carbon nanotube strain distribution sensor for quasi real-time strain monitoring of lightweight design materials.*

• M. Schagerl, S. Gschoßmann, N.K. Karna, M. Meindlhumer, C. Viechtbauer and Y. Zhao,
  *On the development of Structural Health Monitoring systems for automatic strength control of commercial aircraft spoilers.*
  M. Wiedemann and T. Melz (Eds.), Smarte Strukturen und Systeme, 460-471, De Gruyter Oldenbourg, 2016.

• S. Hörmann, A. Adumitroaie and M. Schagerl,
  *Through-thickness fatigue behavior of non-crimp fabrics featuring manufacturing defects.*

• M. Meindlhumer and M. Schagerl,
  *Strength and weight equivalent substitution of large sandwich panels by monolithic CFRP structures.*

• S. Gschoßmann, Y. Zhao and M. Schagerl,
  *Development of data acquisition devices for electrical impedance tomography of composite materials.*

• A. Adumitroaie, E.J. Barbero and M. Schagerl,
  *Intra-laminar progressive damage of general configuration laminated composites.*

• S. Gschoßmann, C. Humer and M. Schagerl,
  *Lamb wave excitation and detection with piezoelectric elements: Essential aspects for a reliable numerical simulation.*
• Y. Zhao and M. Schagerl,
*Shear Stress Monitoring of a Single-Lap Joint Using Inkjet-Printed Carbon Nanotube Strain Distribution Sensor.*

• M. Grillenberger and M. Schagerl,
*Extended Characterization of the Hardening and Failure Behavior of Advanced High Strength Steels at Dynamic Compression Load.*

• M. Schagerl, C. Viechtbauer and M. Schaberger,
*Optimal Placement of Fiber Optical Sensors along Zero-strain Trajectories to Detect Damages in Thin-walled Structures with Highest Sensitivity.*

• C. Viechtbauer, T. Erlinger and M. Schagerl,
*Evaluation of the E/M Impedance Method as a SHM Technique for Large Civil Aircraft Spoilers: Analytical, Numerical and Experimental Studies Performed with Simple Structures.*

• M. Schagerl, C. Viechtbauer and S. Hörrmann
*On the monitoring and implications of growing damages caused by manufacturing defects in composite structures.*

• Y. Zhao, C. Viechtbauer, K. Loh and M. Schagerl,
*Enhancing the Strain Sensitivity of Carbon Nanotube-Polymer Thin Films For Damage Detection and Structural Monitoring.*
Proceedings of the 11th International Workshop on Advanced Smart Materials and Smart Structures Technology, e-storage media (8 pages), 2015.

• C. Kralovec, M. Schagerl and K.-U. Schröder,
Deutscher Luft- und Raumfahrtkongress 2015, Deutsche Gesellschaft für Luft- und Raumfahrt (DGLR), DGLR-Publikationsdatenbank (10 pages), 2015.

• K.-U. Schröder, A. Preisler, C. Viechtbauer and M. Schagerl,
*On the Damage Diagnosis Based on Structural Analysis Data.*

• C. Viechtbauer, M. Schagerl and K.-U. Schröder,
*Validation of Structural Parameters as Damage Indicators for Monitoring Plates in the Post-Buckling Regime.*

• M. Schagerl,
*Belastungsgerechte Auslegung und Festigkeitskontrolle von Leichtbauteilen.*
• M. Meindlhumer, M. Schagerl and M. Fleischmann,  
*Towards a monolithic design of large aircraft wing spoilers using numerical topology and laminate optimization.* 

• B. Müller, M. Schagerl, K.-U. Schröder and E. Till,  
*On the relations between the collapse mode and the possibility of cracks of axially crushed profiles.*  

• G. Prechtl, M. Schagerl and K.-U. Schröder,  
*Lightweight potential and structural optimization of components made of Steel-FRP-Hybrid.*  

• M. Vetr, M. Schagerl and K.-U. Schröder,  
*On the Application of the Limit Drawing Ratio to Complex Geometries.*  

• B. Müller, M. Schagerl and K.-U. Schröder,  
*On the folding of plates which buckle before and beyond the elastic limit.*  

• C. Viechtbauer, M. Schagerl and K.-U. Schröder,  
*Structural Health Control – A comprehensive concept for observation and assessment of damages applied on a Darrieus wind turbine.*  

• K.-U. Schröder, C. Viechtbauer and M. Schagerl,  
*Identification and Monitoring of Structural Parameters as Damage Indicators for Plates in the Post-Buckling Regime.*  

• C. Viechtbauer, M. Schagerl and K.-U. Schröder,  
*From NDT over SHM to SHC – the future for wind turbines.*  
Proceedings of the 6th International Conference on Structural Health Monitoring of Intelligent Infrastructure (SHMII), Hong Kong, 2013.

• C. Viechtbauer, K.-U. Schröder and M. Schagerl,  
*Structural Health Control – A comprehensive concept for observation and assessment of damages.*  

• C. Kralovec, M. Schagerl and K.-U. Schröder,  
*Stress concentrations at free edges of shear webs.*  

• G. Prechtl, M. Schagerl and K.-U. Schröder,  
*Geometrically exact solution of a buckling column with asymmetric boundary conditions.*  

• B. Müller, M. Schagerl and K.-U. Schröder,  
*A systematic approach to design crash elements and to validate FE-analyses by combining computational methods with analytical considerations.*

• M. Schagerl,
*On the magnitude of surface stresses of buckled plates.*

• S. Döhler, K.-U. Schröder, M. Schagerl and T. Waltenberger,
*On the Influence of Material Parameters in Deep Drawing Processes of Non-axisymmetric Parts.*

• M. Schagerl,
*Anforderungen der modernen Luftfahrt an Leichtbau und Konstruktionswerkstoffe.*

• M. Schagerl and A. Berger,
*On the appropriate treatment of singularly perturbed wave equations.*

• M. Schagerl,
*Simple mechanical models of tether reel mechanisms.*

• M. Schagerl, A. Steindl and H. Troger,

• G. Wiedermann, M. Schagerl, A. Steindl and H. Troger,
*Simulation of Deployment and Retrieval Process in a Tethered Satellite System Mission.*

• M. Schagerl, G. Wiedermann and H. Troger,
*Boundary conditions for the cable dynamics of tethered satellite systems.*

• G. Wiedermann, M. Schagerl, A. Steindl and H. Troger,
*Computation of Force Controlled Deployment and Retrieval of a Tethered Satellite by the Finite Elements Method.*

• M. Schagerl,
*On the Numerically Efficient Calculation of a Kink in a String Pendulum.*

• M. Krupa, M. Schagerl, A. Steindl, W. Steiner and H. Troger,

• W. Poth, M. Schagerl, A. Steindl, W. Steiner and H. Troger,
*Numerically Efficient Formulation of the Equations of Motion of Tethered Satellite Systems.*
• D. Dinevski, M. Schagerl and H. Troger,
  *On the Influence of Bending Stiffness to a Free Falling Folded String.*

• M. Schagerl, W. Steiner and H. Troger,
  *On numerical problems in the simulation of tethered satellite systems.*
  Proceedings of the Workshop on Advanced Mathematical Methods in the Dynamics of Flexible Bodies,

• M. Schagerl,
  *On the Dynamics of the Folded and Free Falling Inextensible String.*

• M. Schagerl,
  *Dynamik von Seilen unter holonomen Zwängen.*

• W. Poth, M. Schagerl, A. Steindl, W. Steiner and H. Troger,
  *Some Aspects of the Numerical Treatment of Tethered Satellite System Equations.*

• W. Steiner, M. Schagerl and H. Troger,
  *Nonlinear Large Oscillations of a Tethered Satellite System with Variable Tether Length.*

• M. Krupa, M. Schagerl, A. Steindl and H. Troger,
  *Relative equilibria of tethered satellite systems and their stability.*

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**Industry Contributions**

During my employment at Airbus from 2002 to 2009 issuing of various technical articles on aircraft structure analysis, for example

- Static strength analysis of pins in metallic shear lugs,
- Analysis method of composite frame structures,
- Concept for a static strength analysis procedure for multi-girder rear fuselage frames,
- On the lateral stability of long, laterally unsupported fuselage frame sections,
- Nonlinear FE studies of the effective width of aircraft skins under frame bending,
- An analytical formula for the effective width of pillowing and flattening curved aircraft panels,

and further technical memoranda for structure specific design, policies for aircraft certification, structure component test specifications and structure analysis tool specifications for external programming. These documents are stored at the Airbus document center and underlie the confidentiality restrictions of Airbus.

Since 2003 I am member and since 2006 chairman of the Industry Committee for Structural Analysis (IASB) – the issuing authority of the Handbook Structure Analysis (HSB). The HSB documents agreed structure analysis methods and procedures for aeronautical design and contains chapters on definitions, materials, joints, static analyses, stability, static strength, fatigue and damage tolerance, and vibrations.
Theses

- M. Schagerl,
  *Some nonlinear problems of elastic structures and their treatment using geometrically exact theories.*

- M. Schagerl,
  *Die Ausbreitung transversaler Wellen und Knickstellen in einem perfekt flexiblen Faden.*

- M. Schagerl,
  *Adaptive Regler mit Modellidentifikation - theoretischer Überblick und Simulation.*