

## WORKSHOPS PROGRAM

---

### **14th Workshop on Dependability and Fault Tolerance**

- 3 *Valentin Fitz, Klaus Echtle*  
General Extension of FABAN and a Topology-based Approach to tolerate any Number of Faults
- 11 *Klaus Echtle*  
Detection of Wrongly Directed Messages by Efficient Fault-Tolerance Signatures
- 21 *Armin Lunkeit, Hertmut Pohl*  
Model-based Security Engineering for Secure Systems Development
- 31 *Onur Kilincceker, Ercument Turk, Moharram Challenger, Fevzi Belli*  
Applying the Ideal Testing Framework to HDL Programs
- 37 *Peter Sobe*  
Compressed Low-rate Codes for Failure-tolerant Distributed Storage

---

### **13th Workshop on Parallel Systems and Algorithms**

- 43 *Philipp Gschwandtner, Alexander Hirsch, Shajulin Benedict, Thomas Fahringer*  
Towards Automatic Compiler-assisted Performance and Energy Modeling for Message Passing Parallel Programs
- 51 *Jan Frenzel, Kim Feldhoff, René Jakel, Ralph Müller-Pfefferkorn*  
Tracing of Multi-Threaded Java Applications in Score-P Using Bytecode Instrumentation
- 59 *Christian Schmitt, Frank Hannig, Jürgen Teich*  
A Target Platform Description Language for Parallel Code Generation
- 67 *Jörg Keller, Patrick Eitschberger*  
Mapped Taskgraphs as a Tool for Optimization in Static Taskgraph Scheduling
- 72 *Thomas Becker, Pablo Busse, Tobias Schuele*  
Evaluation of Dynamic Task Scheduling Algorithms in a Runtime System for Heterogeneous Architectures
- 80 *Jörg Keller, Patrick Eitschberger*  
Parallel Exploration of an Unknown Random Forest

---

### **3rd FORMUS<sup>3</sup>IC Workshop**

- 86 *Georg Seifert, Sebastian Hiergeist*  
Reverse Engineering the Timing Parameters of the I/O-System in Microcontrollers
- 94 *Tobias Langer, Lukas Osinski, Michael Schmid, Jürgen Mottok*  
Work-in-Progress: Real-Time Scheduling of Parallel Applications with Gang Scheduling
- 102 *Michael Schmid, Tobias Langer, Lukas Osinski, Jürgen Mottok*  
Parallel Active Object Pattern
- 110 *Lukas Osinski, Tobias Langer, Michael Schmid, Jürgen Mottok*  
PyFI - Fault Injection Platform for Real Hardware
- 117 *Christian Widerspick, Wolfgang Bauer, Dietmar Fey*  
Latency Measurements for an Emulation Platform on Autonomous Driving Platform NVIDIA Drive PX2

---

## **6th International Workshop on Self-Optimisation in Autonomic and Organic Computing Systems**

- 127 *Ada Diaconescu, Pempe Mata, Kirstie Bellman*  
Self-integrating Organic Control Systems: from Crayfish to Smart Homes
- 135 *Anthony Stein, Andreas Margraf, Jürgen Moroskow, Steffen Geinitz, Jörg Hähner*  
Toward an Organic Computing Approach to Automated Design of Processing Pipelines
- 143 *Adrian Calma, Jochen Kuhn, Jan Marco Leimeister, Paul Lukowicz, Sarah Oeste-Reiß, Albrecht Schmidt, Bernhard Sick, Gerd Stumme, Sven Tomforde, Anna Katharina Zweig*  
A Concept for Productivity Tracking based on Collaborative Interactive Learning Techniques
- 151 *Gilles Irénée, Fernand Neyens, Denis Zampunieris*  
A Rule-Based Approach for Self-Optimisation in Autonomic EHealth Systems
- 155 *Sven Tomforde, Tobias Dehling, Reinhold Haux, Denis Huseljic, Daniel Kottke, Jonas Scheerbaum, Bernhard Sick, Ali Sunyaev, Klaus-Hendrik Wolf*  
Towards Proactive Health-enabling Living Environments: Simulation-based Study and Research Challenges

---

## **2nd Workshop on Computer Architectures in Space**

- 165 *Rainer Gerlich, Ralf Gerlich, Karsten Gordon, Merlin Barschke, Sergio Montenegro, Erik Dilger, Frank Fleder*  
Verification of the C++-Operating System RODOS in Context of a Small-Satellite
- 173 *Gerard Vives Vallduriola, Diego Andrés Suárez Trujillo, Tim Helfers, Damien Daens, Arthur Scharf, Jens Utzmann, Jean-Noel Pittet, Alessandro Vananti*  
The Use of Different Architectures and Streak Observations Algorithms to Detect Space Debris
- 180 *Hannes Zöllner, Thomas Brömel, Burkart Voß*  
Generating SEL and SEU with a class 1 laser setup – extensions and further investigations relating applicability
- 183 *Ludovica Bozzoli, Luca Sterpone*  
COMET: a Configuration Memory Tool to Analyze, Visualize and Manipulate FPGAs Bitstream
- 187 *Phillip Hagel, Jonas Burgdorf, Sebastian Wenzel*  
The Flying Laptop Satellite as a Low-Threshold Testbed for Computing in Orbit
- 192 **List of Authors**

## 14th Workshop on Dependability and Fault Tolerance

### Welcome Message from Workshop Chairs

The growing use of networked computers in technical systems, work environments, communication and individual homes has demonstrated the importance of system dependability also to a broader public. To solve this general problem, a variety of approaches is being developed and discussed. It is the aim of this workshop to present contributions to this area of research and bring together scientists working in this field.

The Common Technical Committee on Dependability and Fault Tolerance of the three German Computing Societies Gesellschaft für Informatik (GI), Informationstechnische Gesellschaft (ITG) and Gesellschaft für Automatisierungstechnik (VDI/VDE-GMA) is continuously working to support and coordinate activities in the research area of dependable computing within the German research community. With this 2018 conference event, organized in conjunction with ARCS in Braunschweig, Germany, we proceed in a series of workshops having started in 1999. The Program Committee has selected five contributions to be presented.

The contributions are covering a spectrum of dependability problems and solutions, from model-based security engineering and testing frameworks to the extension of CRCs by signatures with minimal overhead.

Finally, we would like to thank the members of the Program Committee for their work, and the organizers of the ARCS 2018 conference for their activities to support this workshop event.

#### **Bernhard Fechner**

*FernUniversität in Hagen, Hagen, Germany, [Bernhard.Fechner@fernuni-hagen.de](mailto:Bernhard.Fechner@fernuni-hagen.de)*

**(Workshop Chair)**

#### **Karl-Erwin Großpietsch**

*St. Augustin, Germany, [karl-erwin.grosspietsch@online.de](mailto:karl-erwin.grosspietsch@online.de)*

**(Workshop Chair)**

### Workshop Chairs

Bernhard Fechner  
Karl-Erwin Großpietsch

FernUniversität in Hagen, Germany  
St. Augustin, Germany