

February 25 – 28 , 2018, Dagstuhl Seminar 18092

# The Logical Execution Time Paradigm: New Perspectives for Multicore Systems

## Draft program

### Monday

<b>9:00-10:30</b>	45'	Introduction (by the organizers and then 1 min per participant)
<b>Introduction</b>	45'	Christoph Kirsch (Universität Salzburg, AT) <i>From Logical Execution Time to Principled Systems Engineering</i>
<b>11:00-12:15</b>	45'	Hermann von Hasseln (Daimler AG – Böblingen, DE) and Stefan Kuntz (Continental Automotive GmbH – Regensburg, DE) <i>Industrial Context</i>
<b>Industrial context</b>	30'	<b>Discussion</b>
<b>14:00-15:30</b>	15'	Hermann von Hasseln (Daimler AG – Böblingen, DE) and Dirk Ziegenbein (Robert Bosch GmbH – Stuttgart, DE) <i>Migration of Legacy Embedded Control Software from Singlecore to Multicore Controllers</i>
<b>Industrial implementation of LET</b>	15'	Ralph Mader (Continental Automotive GmbH – Regensburg, DE) <i>Implementation of Logical Execution Time in an AUTOSAR based Embedded Automotive Multi-core Application</i>
	15'	Andreas Naderlinger (Universität Salzburg, AT) <i>LET for Legacy and Model-based Applications</i>
	15'	Sebastian Kehr (Denso Automotive – Eching, DE) <i>Parallelization of Automotive Control Software</i>
	30'	<b>Discussion</b>
<b>16:00-17:00</b>	15'	Matthias Beckert (TU Braunschweig, DE) <i>Integration of the Logical-Execution-Time Paradigm in the Automotive E/E Architecture</i>
<b>Research implementation of LET</b>	15'	Alessandro Biondi (Sant'Anna School of Advanced Studies – Pisa, IT) <i>Achieving Predictable Multicore Execution of Automotive Applications Using the LET Paradigm</i>
	15'	Jorge Luis Martinez Garcia (Robert Bosch GmbH – Stuttgart, DE) <i>End-to-End Latency with Logical Execution Time</i>
	15'	<b>Discussion</b>
<b>17:00-18:00</b>	60'	<b>Breakout session</b>

## Tuesday

<b>9:00-10:30</b> <b>LET and related paradigms (1/2)</b>	45'	Florence Maraninchi (VERIMAG – Grenoble, FR) <i>From Physical Timing Requirements to Certifiable Real-Time Systems: How to capture requirements and generate correct real-time programs?</i>
	15'	Claire Pagetti (ONERA – Toulouse, FR) <i>Embedding multi/many-core COTS in the avionics domain</i>
	30'	<b>Discussion</b>
<b>11:00-12:15</b> <b>LET and related paradigms (2/2)</b>	15'	Marco di Natale (Sant'Anna School of Advanced Studies – Pisa, IT) <i>Beyond the LET and back to Synchronous Models</i>
	15'	Mathieu Jan (CEA LIST – Gif-sur-Yvette, FR) <i>A Time-Triggered execution model for the automotive field and some perspectives</i>
	15'	Sylvain Cotard (Krono Safe – Orsay, FR) <i>Promoting a Paradigm Shift towards LET in an Industrial Context with ASTERIOS</i>
	30'	<b>Discussion</b>
<b>14:00-15:30</b>	15'	Nathan Otterness (University of North Carolina at Chapel Hill, US) <i>Developing a Model of Embedded NVIDIA GPU Behavior</i>
	75'	<b>Breakout session</b>
<b>16:00-17:00</b> <b>LET and control</b>	45'	Karl Henrik Johansson (KTH Royal Institute of Technology – Stockholm, SE) <i>On event- and time-triggered communication in networked control systems</i>
	15'	Dirk Ziegenbein (Robert Bosch GmbH – Stuttgart, DE) <i>LET as interface between SW integrators and control engineers?</i>
<b>17:00-18:00</b>	60'	<b>Breakout session</b>

## Wednesday

<b>9:00-10:30</b> <b>Future directions of LET</b>	15'	Sophie Quinton (INRIA – Grenoble, FR) <i>Reconciling the LET paradigm with its current use in the automotive industry</i>
	15'	Rolf Ernst (TU Braunschweig, DE) <i>System Level LET</i>
	15'	Björn Brandenburg (MPI-SWS – Kaiserslautern, DE) <i>Fault Tolerance and LET: A Perfect Match?</i>
	15'	Benoît Dupont de Dinechin (Kalray – Grenoble, FR) <i>Embedded HPC with MPPA Manycore Processors</i>
	30'	<b>Breakout session</b>

<b>11:00-12:15</b>	45'	<b>Breakout session</b>
	30'	<b>Conclusion</b>

## **Possible topics for discussion during breakout sessions**

1. What is the difference between the original LET paradigm and its implementation in the automotive industry?
2. How to efficiently implement LET on a multicore platform?
3. Parallelization of legacy control software based on LET
4. What is the fundamental difference between LET and the synchronous model?
5. What is the impact of using LET on control engineering?

Please feel free to send your topics to the organizers. More topics will be identified on the fly during the seminar and we will determine dynamically which topics we want to spend time on during breakout sessions. We also expect to have brief informal summaries of the breakout sessions in the evenings.