December 9,10, 2014

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Principles of Equation-Based Object-Oriented Modeling and Languages

December 9 – h 9:30-13:00 14:30-17:00
December 10 – h 9:00-13:00
Blue Room – TeCIP Institute

This course discusses the fundamentals of equation-based modeling languages and use Modelica and other languages as examples. The course contents include:

- Introduction to acausal modeling languages and Modelica
- Acausal connection semantics
- DAE Index and Index Reduction
- Higher-order acausal models and meta-programming in Modelyze
- Model exchange and co-simulation with the Functional Mock-Up (FMI) standard

Some of these topics are basic, whereas other topics are more advanced and concern the research front in the area. The course mixes lectures, short theoretical exercises, and hands-on exercises using software (OpenModelica and Modelyze).

The short course is valid for 1 credit for PhD students.

Short Bio:
David Broman is Associate Professor at KTH Royal Institute of Technology, Sweden. He also has a part time research position at the University of California, Berkeley, USA. David received his Ph.D. in Computer Science in 2010 from Linköping University, Sweden. From 2011 to 2014, he was Assistant Professor at Linköping University. During this time, he also spent 2.5 years at the University of California, Berkeley as a Visiting Scholar and Assistant Research Engineer. His research is focused on time-aware systems design, in particular programming and modeling language theory, real-time systems, compiler technology, embedded computer architectures, and mathematical modeling and simulation of cyber-physical systems. He has worked five years within the software security industry, co-founded the EOOLT workshop series, and is member of IFIP WG 2.4, Modelica Association and the TAACCS steering committee.