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Atomicity: A Unifying Concept in Computer Science Papers from Dagstuhl Seminar 06121 J.UCS Special Issue

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The concept of atomicity is important to many aspects of computer science. The four papers collected after this introduction come from a second Schloss Dagstuhl seminar that brought together researchers from four different fields to discuss Atomicity. The "manifesto" [JLRW05] from the earlier seminar in 2004 captured the desire of researchers from database, formal methods, hardware and fault tolerance to benefit from each others' insights.

The meeting from which the current papers derive (Dagstuhl Seminar 06121) was held in the spring of 2006 and was again very fruitful with a useful overlap of participants from the earlier event.

Dagstuhl's own seminar report is visible at `http://drops.dagstuhl.de/portals/index.php?semnr=06121` and is an excellent record of the ideas presented during the time spent there.

After the 2004 seminar, several of those involved were prepared to write full length journal papers that were influenced by the event (cf. [BJ05] and the following papers). Again, after the 2006 event, a subset of the participants have taken the opportunity to provide a more thought-through account of their ideas. The papers here are:

- *Improving Program Correctness with Atomic Exception Handling* by Christof Fetzer and Pascal Felber
- *Specification and Refinement of Access Control* by Dominique Méry and Stephan Merz
- *Achieving Atomicity for Web Services Using Commutativity of Actions* by Michael Melliar-Smith and Louise Moser
- *On the Use of a Reflective Architecture to Augment Database Management Systems* by Luís Rodrigues et al.

The titles of these papers alone indicate the breadth of the discussions, and it is still very much our feeling that notions of atomicity are very much the core of many areas of computer science (not just the formal methods, reliability, and database areas our participants were primarily drawn from).

There is one additional contribution by David Lomet to which we can only add our own overwhelming sadness at the loss of Jim Gray who made so many contributions to the scientific thought about atomicity.

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The organisers would like to acknowledge the staff at Schloss Dagstuhl whose friendly welcome makes visiting the location "where computer scientists meet" such a pleasure. The scientific interchange between the participants of event 06121 on Atomicity was exciting, open and productive - our thanks go to all of our colleagues.

Personally we should like to thank UK's EPSRC support for our research through the grants for "Splitting (software) atoms safely" and "TrAmS" and the EU for the RODIN grant.

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(Newcastle, October 14, 2007)

References

[BJ05] J. I. Burton and C. B. Jones. Atomicity in system design and execution. *Journal of Universal Computer Science*, 11(5):634–635, 2005.

[JLRW05] C. B. Jones, D. Lomet, A. Romanovsky, and G. Weikum. The atomicity manifesto. *Journal of Universal Computer Science*, 11(5):636–650, 2005.