
Issues of parameterized verification of cache coherence protocols

© V.S. Burenkov, S.R. Ivanov

Bauman Moscow State Technical University, Moscow, 105005, Russia

The article deals with parameterized cache coherence verification. Cache coherence protocols are mechanisms used in multiprocessors. Substantial amount of processor cores leads to the state explosion problem. Two approaches to combat this problem are model checking-based methods, aimed at automation, and theorem proving style methods, aimed at scalability. Information sources show that the most promising methods combine the advantages of both groups. The most successful method is probably the CMP method representing a combined approach. Authors propose a sequence of steps for verification of the industrial-strength Elbrus microprocessors cache coherence protocol.

Keywords: *cache coherence protocol, verification, formal methods, model checking, theorem proving.*

Burenkov V.S. (b. 1989) graduated from Bauman Moscow State Technical University in 2012. Post-graduate student at Bauman University. Author of more than 7 scientific articles. Scientific interests: formal verification of computing systems, algorithms and data structures, microprocessors systems architecture. e-mail: VanSBuren@mail.ru

Ivanov S.R. (b. 1937) graduated from Bauman Moscow Higher Technical School in 1960. Ph.D., Assoc. Professor of the Computer Systems and Networks Department at Bauman University. Author of more than 60 scientific works. Scientific interests: Electronic Computer Design Systems (ECAD systems). e-mail: ivanovsr@bmstu.ru
