



## Self-Stabilizing Systems: 5th International Workshop, Wss 2001, Lisbon, Portugal, October 1-2, 2001 Proceedings

By -

Springer. Paperback. Book Condition: New. Paperback. 236 pages.

Dimensions: 9.1in. x 6.1in. x

0.6in. Physical systems which right themselves after being disturbed evoke our curiosity because we want to understand how such systems are able to react to unexpected stimuli. The mechanisms are all the more fascinating when systems are composed of small, simple units, and the ability of the system to self-stabilize emerges out of its components. Faithful computer simulations of such physical systems exhibit the self-stabilizing property, but in the realm of computing, particularly for distributed systems, we have greater ambition. We imagine that all manner of software, ranging from basic communication protocols to high-level applications, could enjoy self-corrective properties. Self-stabilizing software offers a unique, non-traditional approach to the crucial problem of transient fault tolerance. Many successful instances of modern fault-tolerant networks are based on principles of self-stabilization. Surprisingly, the most widely accepted technical definition of a self-stabilizing system does not refer to faults: it is the property that the system can be started in any initial state, possibly an illegal state, and yet the system guarantees to behave properly in finite time. This, and similar definitions, break many traditional approaches to program design, in which the programmer by habit makes assumptions about initial conditions. The composition of self-stabilizing systems, initially seen as a daunting challenge, has been transformed into a manageable task, thanks to...



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