



RETRACTED ARTICLE: Research on Dual-Core Lock Step Mechanism and Its Application for Commercial High Performance APSoC

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The editors have retracted this article [1] because there are two major methodological flaws in the article:

1. Reliability model is flawed. In states 0, 1, 2, 3, 4, 5, only state 0 and state 1 exist. State 2, 3, 4, 5 will be never reachable. State 1 can't judge which machine has a problem. Only if there is an error, state 1 must be rolled back to determine whether the permanent fault occurs. If it is repeated to state 1, there is 1 single machine permanent fault, which can be defined as new state 2. At this time, the state can pass the self-test, remove the fault single machine, the system down to single machine state. In case of permanent fault again in state 1, the two single machines will fail, and the system will fail. This is the new state 3. The system reliability model shall be based on state 0, 1, new. State 2, new state 3 established.

2. The values of λ , γ , c parameters in Markov state transition matrix do not account for the single particle flip threshold and reversal probability of FPGA used in the system according to the actual orbit of the satellite, and there is no basis for $MTBF=8.37*10000$ hours.

All authors agree to this retraction.

The online version of this article contains the full text of the retracted article as electronic supplementary material.

References

1. Sun, Y., Wu, P., Li, J. et al. Research on Dual-Core Lock Step Mechanism and Its Application for Commercial High Performance APSoC. Adv. Astronaut. Sci. Technol. (2019). <https://doi.org/10.1007/s42423-019-00036-y>

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