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Paper Review: FTI

Summary
This paper addresses issues in fault tolerance that will become more significant in post-petascale systems. The authors propose a new multi-level checkpointing scheme that will reduce overhead and increase reliability by using Reed-Solomon encoding techniques. The tool they produced, called the Fault Tolerance Interface, is a portable library that improves checkpointing time and efficiency on HPC systems.

Strengths
I thought that they broke down all of the individual parts of the paper really well. In the abstract you read about this "low-overhead high-frequency multi-level checkpoint technique … high-reliable topology-aware Reed-Solomon encoding …" and I think most people would be lost already. But there is a section or subsection dedicated to explaining each one of those terms very well and talking about how they apply to this application. I also thought it was cool that they provided results from a production-level scientific application (SPECFEM3D) to convince us that their tool really works.

Shortcomings
In the Reliability Study section, I didn't feel like the explanation of the two formulas was enough to really give the reader a clear idea of how they were being used in the evaluation. Some concepts are hard to understand because they are built off of previous works and not explained much in this paper. I found it difficult to stay interested while dredging through all of the technicalities in the Evaluation section.

Improvements
I realize that this work is building upon a previous work, but as someone who doesn't have the time to read all of the referenced papers (or at least the important ones) it would be nice if they could provide some kind of summary of that previous work at the beginning of the paper. There were a few points at which they referenced a previous work, either assuming that the reader has already read that work or will be interested in reading it before continuing, and therefore not elaborating on exactly what they were referencing.

Question(s)
What exactly is SCR?