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**Paper Review: Assessing the Effects of Data Compression in Simulations Using Physically Motivated Metrics**

*Summary*

This paper aims to study the effects of lossy compression on physics simulations as a way to counter expected data-movement bottleneck issues in future HPC systems. Physical metrics are used to evaluate lossy compression performance in three different physics simulations.

*Strengths*

I really liked the way that they performed the experiment on three different, well-accepted physics applications and explained them in a way that was clear and concise. The results were easy to understand. The comparison between disk and memory compression was interesting and helped me understand why this research is important.

*Shortcomings*

*Improvements*

*Question(s) for Presenter*

Why is memory compression not helpful in current systems, but could be helpful in future systems?

*Additional Questions*

* Where in the memory hierarchy does this paper use lossy compression?
  + *Disk compression:* arrays are compressed before they are written to disk.
  + *Memory compression:* arrays are compressed while stored in off-chip memory and decompressed when they are loaded into on-chip cache for computation.
* Describe one physical metric used in the paper. State the application it is used with.
  + Shock position (LULESH)
* The paper discusses several metrics for their test applications. Do you think it would be easy to use these metrics for a new application? Why or why not?
  + Probably not. The metrics used here seem to be very specific to their respective applications. So, unless using them for another application who’s purpose is nearly identical to one of these, I think other metrics would need to be used.