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Contribution ID: **4537** Type: **Oral not-in-competition (Graduate Student) / Orale non-compétitive (Étudiant(e) du 2e ou 3e cycle)**

(G) Classical tensor networks in the thermodynamic limit

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Studying emergent phenomena in classical statistical physics remains one of the most computationally difficult problems. With the appropriate algorithm to renormalize the system, one of the most effective methods to study these problems is tensor networks. In the context of research areas like condensed matter, the result is a coarse grained and truncated system where only the most relevant states ranked by entropy have been maintained. An explosion of numerical algorithms which compute general properties of a statistical physics system such as specific heat, magnetization, and free energies are available; however, an overview of which tensor algorithms are best and where they must be improved would be highly advantageous for the scientific community. With our newly coded library of open access tensor network algorithms we make new recommendations of which algorithms to use, speculate on improvements for future algorithms, and provide information on how to implement novel tensor networks using our framework, the DMRjulia library.

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Keyword-3

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