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How can high-resolution magnetohydrodynamic models help in understanding solar variability on various timescales?

Wednesday 18 September 2024 11:00 (30 minutes)

Cross-disciplinary research efforts have led to the emergence of numerical tools capable of taking advantage of the present-day heterogeneous supercomputers, enabling computing at Exa-scale. The first results of running these tools in full production are emerging. In contrast to the CPU paradigm, these runs can be completed within days - a week in contrast to several months. Hence, when submitting this abstract I cannot be totally sure what results I will have at hand in September - fantastic!

These results shed new light into the relevance of small-scale dynamo instability in global solar magnetism and its variability, but also the role of this instability for angular momentum transport, crucial in generating differential rotation, one key ingredient in large-scale dynamo action. It is evident that all the scales (from very short and small spatial scale, in the order of days and size of the magnetic network, to very long and global scale in size) are coupled. In my talk I will review the latest results (available then) and their implications for the global solar variability.

Solicited or Contributed

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