

ADASS Conference 2025:
Abstract for a poster on the topic of
memory-based computing

DZA WP3 Data Science

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The Square Kilometre Observatory (SKAO) is able to capture very high-resolution images of the universe, where individual images can be up to petabytes in size. Traditionally, large volumes of data are streamed in chunks from hard drives. However, there is the “memory wall problem”: processors often stall because they are waiting for data. A shift in paradigm is needed: the current processor-centric computing should be replaced by a memory-based computing. The German Center for Astrophysics (DZA) is exploring a prototype of this new type of computing architecture. The poster introduces the basics of memory-based computing and presents first results from performance studies, where analyses of large amounts of data from hard disks are compared with corresponding analyses using memory-based computing.