Dynamical low-rank approximation

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ABSTRACT

In low-rank approximation, separation of variables is used to reduce the amount of data in computations with high-dimensional functions. Such techniques have proved their value, e.g., in quantum mechanics and recommendation algorithms. It is also possible to fold a low-dimensional grid into a high-dimensional object, and use low-rank techniques to compress the data. Here, we consider low-rank techniques for time-dependent problems. In particular, we study properties of the low-rank approximation space, and what consequences they have for time integration schemes.