报告题目：Linearized SVM to construct linear, fully-decoupled and structure-preserving schemes for TCPDEs

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报告摘要：

In this talk, we will introduce a linearized supplementary variable method (LSVM) for construction of linear, fully decoupled, and structure-preserving schemes with constant coefficients, tailored to thermodynamically consistent PDEs. The method combines explicit discretization of nonlinearities with a balance mechanism, leading to an equivalent reformulation that enables two classes of second-order, energy-stable time-marching schemes. The resulting linear systems feature constant-coefficient matrices, enabling highly efficient solution procedures, while rigorous analysis establishes their well-posedness and thermodynamic consistency. A distinctive advantage of LSVM is its ability to naturally generate structure-preserving schemes for multi-variable and highly nonlinear systems. This capability is demonstrated through benchmark tests, which highlight the accuracy, stability, and efficiency of the proposed schemes compared with classical approaches.

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