Existence and optimality of SSP linear multistep methods: a duality-based approach

Adrián Németh (Széchenyi István University, Győr), David Ketcheson

We investigate strong stability preserving linear multistep methods and prove the existence of explicit LMMs of any order with positive SSP coefficients. Our approach is based on formulating a linear programming problem and establishing infeasibility of the dual problem. This yields a number of other theoretical advances.