On Strong Stability Preserving time stepping methods

Inmaculada Higueras (Public University of Navarre)

During the last decades, the study of Strong Stability Preserving (SSP) properties for different kinds of time-stepping schemes has been an active research area. SSP methods aim at preserving qualitative properties of the exact solution (e.g., monotonicity, contractivity, positivity, discrete maximum principles, etc.), in general, under step size restrictions. The basic assumption is the numerical preservation of these properties by the explicit Euler method.

However, for some problems, the performance of SSP and non-SSP schemes is quite similar. On the other hand, for some other problems, SSP methods preserve qualitative properties even though the explicit Euler does not preserve them.

In this talk we give an overview on SSP methods trying to clarify some issues on this topic.