

Entropy diminishing numerical schemes for parabolic equations

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Abstract. *It is well understood since a bit more than 15 years that the control of the entropy and of its dissipation is crucial in order to characterize the long-time behavior of the solutions to convection diffusion equations. It is also of great interest for the study of cross-diffusion systems arising for instance in porous media flows. Therefore, the design of schemes that preserve at the discrete level the decay of the entropy is a natural quest. Another very natural question is the preservation by the scheme of the steady states, so that the scheme can be asymptotic preserving in the long time limit. I will present on a simple model problem several (old and new) solutions to build such schemes, then Ill discuss their pros and cons.*