

# ANALYSIS ON SOME PARABOLIC SYSTEMS (STRONGLY COUPLED OR HIGHER ORDER)

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ABSTRACT. In this talk, I will give a brief outline of the works we have done on some strongly coupled parabolic systems and a fourth order parabolic equation, on which such classical techniques as comparison principle for parabolic equations could not work. The models are from diffusion systems in semiconductor simulation and population models in biomathematical model. Our ideas are mainly based on the exponential transformation and entropy inequalities. We will give the global existences and large time behavior of the weak solutions.

These are joint works with Xiuqing Chen (Beijing), Huaiyu Jian (Beijing), Qiangchang Ju (Beijing) and Ansgar Juengel (Vienna) separately.