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DK Seminar

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Vienna University of Technology,
Freihaus, green area, 4th floor, 101C

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Joint work with A. Jüngel

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Cross-diffusion systems in population dynamics

In this talk I will present recent results concerning global existence of weak solutions of a certain class of cross-diffusion systems describing the temporal evolution of densities of different species when no volume-filling effects are taken into account. This class of models is used for instance in population-dynamics, for example for describing the situation of competing species in a heterogeneous environment by the classical SKT model.

In the case of linear transition rates we show how certain techniques used in the Boundedness-by-entropy method [Jüngel 2015] can be extended to a general finite number of species, overcoming problems arising in the case of more than 2 species with the help of Markov chains.

In the second part of the talk more involved cross-diffusion systems of no volume-filling type will be discussed, and the idea of the duality method developed by M. Pierre and D. Schmitt will be presented.

REFERENCES

- [1] A. Jüngel. The boundedness-by-entropy method for cross-diffusion systems. *Nonlinearity* 28, (2015).