MATHEMATISCHES INSTITUT
DER UNIVERSITÄT MÜNCHEN
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– Blatt 9 –
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PDG I
(Tutorium)

Tutorial 9
(Uniqueness and non-uniqueness of solutions to the heat equation)

In this tutorial we covered the following topics:

- Tychonoff's counterexample to uniqueness of solutions to the heat equation: showing that there exist infinitely many (non-physical) solutions to

$$\begin{cases} u_t - u_{xx} = 0 & \text{in } (0, \infty) \times \mathbb{R} \\ u(0, x) = 0 & \text{on } \{0\} \times \mathbb{R}. \end{cases}$$

- Uniqueness of solutions on bounded domains, using Energy methods.