

Talk announcement

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Singular perturbation of transport problems on pipe networks

We consider transport problems on one-dimensional pipe networks (metric graphs), describing, e.g., the transport of a chemical substance solved in a fluid. Suitable coupling conditions at pipe junctions are needed in order to conserve basic physical principles as conservation of mass and energy, and to guarantee stability and well-posedness. Adding diffusion to the transport process leads to a change in number and type of coupling conditions, which gives rise to boundary layers at pipe junctions in the singular limit of vanishing diffusion. On a single pipe it is well known that solutions to transport-diffusion problems converge to that of the transport problem. We show that a corresponding result also holds on networks.