GLOBAL EXISTENCE AND STABILITY FOR DISSIPATIVE PROCESSES COUPLED ACROSS VOLUME AND SURFACE

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The modelling of technological and biological processes and devices is often characterized by *non-smoothness*: material edges and corners, abruptly changing material properties and a large scope of relevant temporal and spatial scales. From a PDE point-of-view, we need to deal with domains of low boundary regularity, mixed and dynamic boundary conditions, degeneracy and discontinuity of parameters, and, possibly after rescaling, with the coupling of dynamics across voulme and lower-dimensional interfaces or surfaces.

In this talk, I want to consider models of non-linear reaction-drift-diffusion type in non-smooth and/or volume-surface settings and discuss their analysis based on the choice of specific functional analytic settings. The aim is to see aspects of the interaction of thermodynamically consistent modelling and the analysis of the PDE and to establish strategies for simultaneously dealing with non-linearity and non-smoothness.

References

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