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Qualitative properties of coupled parabolic systems of evolution equations

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Abstract. We apply functional analytical and variational methods in order to study well-posedness and qualitative properties of evolution equations on product Hilbert spaces. To this aim we introduce an algebraic formalism for matrices of sesquilinear mappings. We apply our results to parabolic problems of different nature: a coupled diffusive system arising in neurobiology, a strongly damped wave equation, and a heat equation with dynamic boundary conditions.

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