Maximal parabolic regularity for the treatment of real world problems

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ABSTRACT

In order to investigate parabolic equations modelling real world problems we first motivate the choice of the underlying Banach space – essentially determined by the boundary conditions in question. The main candidates are L^p spaces, negatively indexed Sobolev spaces $W_D^{-1,q}$ and interpolation spaces between. For second order divergence operators – including mixed boundary conditions and discontinuous coefficient functions – maximal parabolic regularity is established in any of the aforementioned cases.