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*On the solvability conditions for the diffusion equation with convection terms*

A linear second order elliptic equation describing heat or mass diffusion and convection on a given velocity field is considered in three dimensions. The corresponding operator  $L$  may not satisfy the Fredholm property. In this case, solvability conditions for the equation  $Lu=f$  are not known. In this work, we derive solvability conditions in  $H^2$  for the non self-adjoint problem by relating it to a self-adjoint Schroedinger type operator, for which solvability conditions are obtained in our previous work.