Navier-Stokes Problem with Memory Friction Term

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Abstract: We consider a mathematical model which describes the motion of a fluid governed by 3D unsteady Navier-Stokes System, with temperature-dependent viscosity, subjected to mixed conditions on one part of the boundary and to Coulomb's friction law on the other part. The regularized friction law is modelled with a memory term. We present the variational problem, list the assumptions on the data, then we prove existence and uniqueness results for the velocity field and the pressure of the fluid, in adequate functional spaces.