

## **An optimal control problem for linearised Navier- Stokes equation**

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**Abstract:** In this study, we consider the optimal control problem for Navier-Stokes equation where control function is square summable. We examine the existence and uniqueness of optimal solution and get differentiability of functional. Then, we obtain a necessary optimality condition in the form of a variational inequality using gradient.

**Keywords:** Navier- Stokes, optimal control problem, variational problem.

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