A boundary control problem for stochastic 2D-Navier-Stokes equations

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In this talk, we discuss a stochastic velocity tracking problem for the 2D-Navier-Stokes equations perturbed by a multiplicative Gaussian noise. From physical point of view, the control acts through a boundary injection/suction device with uncertainty, modelled by non-homogeneous Navier-slip boundary conditions. We show the existence and uniqueness of solution to the state equation and prove the existence of an optimal solution to the control problem. In addition, the first-order necessary optimization conditions are analysed.