

# The anisotropic Navier-Stokes system with small unidirectional derivative on the torus

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## Abstract

In the paper “Global Well-Posedness of 3-D Anisotropic Navier–Stokes System with Small Unidirectional Derivative, Y.Liu, M.Paicu and P.Zhang, ARMA 2020”, the authors proved the global well posedness of 3D anisotropic Navier–Stokes system (ANS) with only horizontal dissipation. We want to extend the result for general condition for the smallness of the vertical derivative. Starting by the model on the torus for the horizontal variable, we can show that after doing the Fourier expansion, the multiplier  $1/\sqrt{\Delta_h}$  can be better expressed at least for the parts with zero horizontale average (is corresponding of  $k$  not zero in the fourier in horizontale variable). This is a joint work with Yanlin Liu (Beijing Normal University).