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A REMARK ON ANISOTROPIC DECAY RATE ESTIMATES FOR THE NAVIER-STOKES EQUATIONS

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Abstract. For the nonstationary incompressible Navier-Stokes equations with anisotropically decaying external forces and zero initial data in $\mathbf{R}^n$ $(n \geq 3)$, we continue to consider anisotropic spatial decay rate estimates of the solutions in the so called Serrin's class. We utilize the weighted equation approach in the Lebesgue space equipped with the mixed norm in this paper again. But we here multiply two anisotropically growing functions to the equations at the same time. The double-weighted solutions for the linearized equations are estimated with the weighted and non-weighted external forces. The estimates for the nonlinear terms are more complicated.

In case the temporal decay rates of the external forces are grater than 1, we show the spatial decay rates of the solutions are almost same as those of the external forces in all directions as well as the isotropic decay rate estimates.

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