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Optimal time-decay estimates for the compressible Navier-Stokes equations in the critical L^p framework. (English) [Zbl 1366.35126](#)

Arch. Ration. Mech. Anal. 224, No. 1, 53-90 (2017).

This work is devoted to the derivation of the (optimal) time decay rates of solutions for the isentropic compressible Navier-Stokes equations in the norms of critical spaces. The existence of global in time solutions has been discussed previously in L^2 [*R. Danchin*, Invent. Math. 141, No. 3, 579–614 (2000; [Zbl 0958.35100](#))] and L^p frameworks [*F. Charve* and *R. Danchin*, Arch. Ration. Mech. Anal. 198, No. 1, 233–271 (2010; [Zbl 1229.35167](#))], [*Q. Chen* et al., Commun. Pure Appl. Math. 63, No. 9, 1173–1224 (2010; [Zbl 1202.35002](#))], [*B. Haspot*, Arch. Ration. Mech. Anal. 202, No. 2, 427–460 (2011; [Zbl 1427.76230](#))]. The method of proof relies on refined time weighted inequalities in the Fourier space.

Reviewer: [Piotr Biler \(Wrocław\)](#)

MSC:

[35Q35](#) PDEs in connection with fluid mechanics

[76N10](#) Existence, uniqueness, and regularity theory for compressible fluids and gas dynamics

[35B40](#) Asymptotic behavior of solutions to PDEs

[35B65](#) Smoothness and regularity of solutions to PDEs

Cited in **1** Review
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Keywords:

compressible Navier-Stokes system; decay estimates; critical spaces

Full Text: [DOI](#) [arXiv](#)

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