Algebraic decay in critical Sobolev spaces for Navier-Stokes equations

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An algebraic upper bound for the decay rate of solutions to the Navier-Stokes equations in the critical space $\dot{H}^{\frac{1}{2}}(R^3)$ is derived using the Fourier Splitting Method. Estimates are framed in terms of the decay character of initial data, leading to solutions with algebraic decay and showing in detail the roles played by the linear and nonlinear parts.