MR1106122 (92b:35121) 35Q30 (35B40 76D05)
Amick, Charles J. (1-CHI)
On the asymptotic form of Navier-Stokes flow past a body in the plane.
J. Differential Equations **91** (1991), *no. 1,* 149–167.

Let $\Omega = \mathbf{C}^2 \setminus K$, where K is a compact set with smooth boundary; let w_∞ be a nonzero constant vector. Consider on Ω the solutions w of the stationary Navier-Stokes equations such that $w = 0$ on $\partial\Omega$ and $w \to w_\infty$ at infinity, whose Dirichlet norms are finite. The asymptotic behavior of those solutions is known if their decay is $|w(x,y) - w_\infty| = O(r^{-1/4-\varepsilon})$ for $r^2 = x^2 + y^2 \to \infty$. The main theorem asserts that those solutions have the faster decay $|w(x,y) - w_\infty| = O(r^{-1/2+\varepsilon})$; hence by quoted results the faster decay $|w(x,y) - w_\infty| = O(r^{-1/2})$. That main theorem follows from ingenious estimates of the decay of the vorticity ω, of its product $\varphi \cdot \omega$ by the Stokes stream function φ and from preliminary estimates of the decay of $w(x,y) - w_\infty$. The references are about the Navier-Stokes flows in the plane and also in the space.

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