

Abstract Submitted
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The flow field of a submerged viscous impinging jet J. TILAK RATNANATHER, JUNG H. KIM, Johns Hopkins University, ANTHONY M.J. DAVIS, University of California, San Diego — The flow field of a submerged viscous jet impinging on an infinite plane wall is studied. The whole creeping flow of semi-infinite extent is generated via distributions on a cylindrical pipe of tangentially and normally directed Stokeslets which are modified in two stages to achieve no-slip at the wall at $z = 0$. First the pressure and vorticity jumps associated with the Poiseuille flow upstream in the pipe are forced and then further distributions far upstream of the orifice at $z = h$ are added to achieve no slip on the pipe wall. The adjustment of the interior pipe flow from its upstream parabolic profile to its exit profile is thus included in this creeping flow analysis. The generated flow field for $h = 1, 2, 3, 4, 5$ is used to examine the behaviour of the wall pressure and wall shear stress with respect to h . This behaviour is discussed briefly in the context of physiological experiments that motivated this study.

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