Abstract Submitted
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On investigating wall shear stress in two-dimensional plane turbulent wall jets FARAZ MEHDI, University of New Hampshire, GUNNAR JOHANSSON, Chalmers University of Technology, CHRISTOPHER WHITE, University of New Hampshire, JONATHAN NAUGHTON, University of Wyoming — Mehdi & White [Exp Fluids 50:43–51(2011)] presented a full momentum integral based method for determining wall shear stress in zero pressure gradient turbulent boundary layers. They utilized the boundary conditions at the wall and at the outer edge of the boundary layer. A more generalized expression is presented here that uses just one boundary condition at the wall. The method is mathematically exact and has an advantage of having no explicit streamwise gradient terms. It is successfully applied to two different experimental plane turbulent wall jet datasets for which independent estimates of wall shear stress were known. Complications owing to experimental inaccuracies in determining wall shear stress from the proposed method are also discussed.

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