There are two folders in this file, along with the lab manual and the normalized Blasius velocity profile data.

1. **PIV data:**

*PIV data* folder comprises of both laminar and turbulent velocity profile data for five x locations. The first column in each file indicates y location from the wall (in mm), and the second column indicates the velocity values in m/s.

1. You need to calculate the following parameters and show the values in a table form shown below (**only for the velocity profile measured at x=650 mm**).

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Parameters | Laminar | | Turbulent | |
| Experimental | Theoretical | Experimental | Theoretical |
| δ (Boundary layer thickness) |  |  |  |  |
| δ\* (Displacement thickness) |  |  |  |  |
| 𝝧 (Momentum thickness) |  |  |  |  |
| H (shape factor) |  |  |  |  |
| Cf |  |  |  |  |

1. Normalize y with δ\* and U with U∞ at a x location. Repeat the same for other locations as well. Now ***compare the normalized velocity profile data (for all five locations) with the Blasius velocity profile data in a single plot***. (note: Only for the laminar flow)
2. **Pitot tube data:**

*Pitot tube data* folder comprises of both laminar and turbulent velocity profile data at x=650 mm. The first column in each file indicates y location from the wall (in mm), and the second column indicates the velocity values in m/s.

1. You need to calculate the following parameters and show the values in a table form as shown below.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Parameters | Laminar | | Turbulent | |
| Experimental | Theoretical | Experimental | Theoretical |
| δ (Boundary layer thickness) |  |  |  |  |
| δ\* (Displacement thickness) |  |  |  |  |
| 𝝧 (Momentum thickness) |  |  |  |  |
| H (shape factor) |  |  |  |  |
| Cf |  |  |  |  |

1. Normalize y with δ\* and U with U∞ and ***compare the normalized velocity profile data with the Blasius velocity profile data in a single plot***. (Note: only for the laminar flow).