BSc Fluid Mechanics Lab Measurements

M02 Assignments

A Map the flow field of the cylindrical jet by measuring the velocity distribution! Measure the velocity profiles at the heights z given in terms of the diameter (D_0) of the outlet nozzle: $z_1=0D_0$, $z_2=2D_0$, $z_3=4D_0$, $z_4=6D_0$, $z_5=7D_0$, $z_6=8D_0$, $z_7=9D_0$, $z_8=10D_0$! Measure the planar velocity distribution at height z_6! The spacing of the measurements should be 4 mm for the bottom three profiles, 12 mm for the top two profiles, 8 mm for the rest of the profiles, and set the outlet velocity to 80% of the maximum velocity! Plot the velocity profile at height z_6 on millimeter paper!

B Map the flow field of the cylindrical jet by measuring the velocity distribution! Measure the velocity profiles at the heights z given in terms of the diameter (D_0) of the outlet nozzle: $z_1=0D_0$, $z_2=1D_0$, $z_3=2D_0$, $z_4=3D_0$, $z_5=4D_0$, $z_6=5D_0$, $z_7=7D_0$, $z_8=9D_0$! Measure the planar velocity distribution at height z_4! The spacing of the measurements should be 2 mm for the bottom two profiles, 12 mm for the top two profiles, 6 mm for the rest of the profiles, and set the outlet velocity to 60% of the maximum velocity! Plot the velocity profile at height z_4 on millimeter paper!

C Map the flow field of the cylindrical jet by measuring the velocity distribution! Measure the velocity profiles at the heights z given in terms of the diameter (D_0) of the outlet nozzle: $z_1=0D_0$, $z_2=2D_0$, $z_3=3D_0$, $z_4=4D_0$, $z_5=5D_0$, $z_6=6D_0$, $z_7=8D_0$, $z_8=10D_0$! Measure the planar velocity distribution at height z_5! The spacing of the measurements should be 4 mm for the bottom three profiles, 12 mm for the top two profiles, 8 mm for the rest of the profiles, and set the outlet velocity to 70% of the maximum velocity! Plot the velocity profile at height z_5 on millimeter paper!

D Map the flow field of the cylindrical jet by measuring the velocity distribution! Measure the velocity profiles at the heights z given in terms of the diameter (D_0) of the outlet nozzle: $z_1=0D_0$, $z_2=2D_0$, $z_3=4D_0$, $z_4=6D_0$, $z_5=7D_0$, $z_6=8D_0$, $z_7=9D_0$, $z_8=10D_0$! Measure the planar velocity distribution at height z_6! The spacing of the measurements should be 4 mm for the bottom three profiles, 12 mm for the top two profiles, 8 mm for the rest of the profiles, and set the outlet velocity to 50% of the maximum velocity! Plot the velocity profile at height z_6 on millimeter paper!

E Map the flow field of the cylindrical jet by measuring the velocity distribution! Measure the velocity profiles at the heights z given in terms of the diameter (D_0) of the outlet nozzle: $z_1=0D_0$, $z_2=1D_0$, $z_3=2D_0$, $z_4=3D_0$, $z_5=4D_0$, $z_6=5D_0$, $z_7=7D_0$, $z_8=9D_0$! Measure the planar velocity distribution at height z_4! The spacing of the measurements should be 2 mm for the bottom two profiles, 12 mm for the top two profiles, 6 mm for the rest of the profiles, and set the outlet velocity to 75% of the maximum velocity! Plot the velocity profile at height z_4 on millimeter paper!