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Currents over a sphere moving at different depths and with different speeds

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Current velocities of sphere streamlining on the surface of water and in its bulk are measured. The measurements were carried out at various depths and velocities of sphere towing. Surface currents were experimentally investigated using a modified PTV (Particle Tracing Velocimetry) method. Current in water bulk were measured by the ADV (Acoustic Doppler Velocity meter) sensor. It is shown that as the velocity of sphere towing grows, the ratio between the maximum of the longitudinal component of the current velocity on the water surface to the sphere motion velocity increases. Oscillations of the current velocity in the vicinity of the sphere are recorded. Comparison of experimental data with results of theoretical calculations has shown that the experimental values of the current velocity exceed the theoretical values 1.5 – 3.5 times. It is demonstrated that the current velocity oscillations observed at sphere motion with high velocities are probably due to surface waves generated by this sphere.

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