

Abstract Submitted
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Investigation of particle lift off in a turbulent boundary layer¹
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particles within turbulent flows occur widely in environmental and industrial pro-
cesses. Three-dimensional particle tracking experiments are thus conducted in a
water channel to understand the interaction of finite-size particles with a turbulent
boundary layer. A neutrally buoyant sphere made of wax and iron oxide is first held
in place on the bounding surface by a magnet before being released and tracked.
The sphere is marked with dots to monitor rotation as well as translation. By set-
ting up two pairs of cameras in a stereoscopic configuration, the trajectories of the
sphere are reconstructed and tracked over a distance of 4 to 6δ . Sphere diameters
ranging from 40 to 130 wall units, initial particle Reynolds numbers of 600 to 2000
and friction Reynolds numbers of 500 to 1800 are considered. For this parameter set,
the particle typically lifts off from the wall after release before falling back toward
the wall. Aspects of both particle rotation and translation will be discussed.

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