

Abstract Submitted
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Viscous **boundary**
layers in turbulent Rayleigh-Bénard convection¹ LING LI, RONALD DU
PUITS, ANDRÉ THESS, Ilmenau University of Technology — Thermal convection
at high Rayleigh number is a basic and important ingredient for the motion of air
or the flow of water in the atmosphere and in the ocean. However, particularly in
case of highly turbulent flows the knowledge about the temperature and the velocity
field is still limited. Highly resolved 3d-Laser Doppler Velocimetry measurements
in a large-scale Rayleigh-Bénard experiment with air at Rayleigh numbers up to
 10^{10} have been carried out and presented by our group on 2010's APS conference.
All three velocity components have been measured simultaneously in the vicinity
of the cooling plate in the central axis of the cylindrical sample. We found that
the profile of the mean wall-normal velocity tends to zero. In the contribution of
this year we will enhance the understanding of the heat transport by presenting the
fluctuations of the wall-normal velocity component and the temperature. Again, we
estimate the profile of the local heat flux from the independently measured velocity
and temperature data.

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